SEQUENCE LISTING

<110> Helix Research Institute

<120> STOMACH CANCER-ASSOCIATED GENE

<130> H1-107PCT5

<140>
<141>

<150> JP   1999-248036
<151> 1999-07-29

<150> JP   1999-300253
<151> 1999-08-27

<150> US   60/159590
<151> 1999-10-18

<150> JP   2000-118776
<151> 2000-01-11

<150> US   60/183322
<151> 2000-02-17

<150> JP   2000-183767
<151> 2000-05-02

<150> H1-107DP4
<151> 2000-06-09

<160> 157

<170> PatentIn Ver. 2.0

<210> 1
<211> 1672
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (112)..(1410)

<400> 1

```
gggccacaag gctacagctg ccactgtcgc ctgggtttcc ggccagcgga ggatgatccg 60
caccgctgtg tggacacaga tgagtgccag attgccggtg tgtgccagca gatgtgtgtc 120
aactacgttg gtggcttcga gtgttattgt agcgagggac atgagctgga ggctgatggc 180
atcagctgca gccctgcagg ggccatgggt gcccaggctt cccaggacct cggagatgag 240
ttgctggatg acggggagga tgaggaagat gaagacgagg cctggaaggc cttcaacggt 300
ggctggacgg agatgcctgg gatcctgtgg atggagccta cgcagccgcc tgactttgcc 360
ctggcctata gaccgagctt cccagaggac agagagccac agatacccta cccggagccc 420
acctggccac ccccgctcag tgcccccagg gtccctacc actcctcagt gctctccgtc 480
acccggcctg tggtggtctc tgccacgcat cccacactgc cttctgccca ccagcctcct 540
gtgatccctg ccacacaccc agctttgtcc cgtgaccacc agatccccgt gatcgtagcc 600
aactatccag atctgccttc tgcctaccaa cccggtattc tctctgtctc tcattcagca 660
cagcctcctg cccaccagcc ccctatgatc tcaaccaaat atccggagct cttccctgcc 720
caccagtccc ccatgtttcc agacacccgg gtcgctggca cccagaccac cactcatttg 780
cctggaatcc cacctaacca tgcccctctg gtcaccaccc tcggtgccca gctaccccct 840
caagccccag atgcccttgt cctcagaacc caggccaccc agcttcccat tatcccaact 900
gcccagccct ctctgaccac cacctccagg tccctgtgt ctcctgccca tcaaatctct 960
gtgcctgctg ccaccagcc cgcagccctc cccaccctcc tgccctctca gagccccact 1020
aaccagacct cacccatcag ccctacacat ccccattcca aagcccccca atcccaagg 1080
gaagatggcc ccagtcccaa gttggccctg tggctgccct caccagctcc cacagcagcc 1140
ccaacagccc tggggaggc tggtcttgcc gagcacagcc agagggatga ccggtggctg 1200
ctggtggcac tcctggtgcc aacgtgtgtc tttttggtgg tcctgcttgc actgggcatc 1260
gtgtactgca ccgctgtgg ccccatgca cccaacaagc gcatcactga ctgctatcgc 1320
tgggtcatcc atgctgggag caagagccca acagaaccca tgcccccag gggcagcctc 1380
acagggtgc agacctgcag aaccagcgtg tgatggggtg cagacccccc tcatggagta 1440
tggggcgctg gacacatggc cggggctgca ccagggaccc atgggggctg cccagctgga 1500
cagatggctt cctgctcccc aggcccagcc agggtcctct ctcaaccact agacttggct 1560
```

```
ctcaggaact ctgcttcctg gcccagcgct cgtgaccaag gatacaccaa agcccttaag 1620
acctcagggg gcgggtgctg gggtcttctc caataaatgg ggtgtcaacc tt         1672
```

<210> 2
<211> 433
<212> PRT
<213> Homo sapiens

<400> 2

```
Met Cys Val Asn Tyr Val Gly Gly Phe Glu Cys Tyr Cys Ser Glu Gly
 1               5                  10                  15

His Glu Leu Glu Ala Asp Gly Ile Ser Cys Ser Pro Ala Gly Ala Met
                20                  25                  30

Gly Ala Gln Ala Ser Gln Asp Leu Gly Asp Glu Leu Leu Asp Asp Gly
             35                  40                  45

Glu Asp Glu Glu Asp Glu Asp Glu Ala Trp Lys Ala Phe Asn Gly Gly
    50                  55                  60

Trp Thr Glu Met Pro Gly Ile Leu Trp Met Glu Pro Thr Gln Pro Pro
65                  70                  75                  80

Asp Phe Ala Leu Ala Tyr Arg Pro Ser Phe Pro Glu Asp Arg Glu Pro
                85                  90                  95

Gln Ile Pro Tyr Pro Glu Pro Thr Trp Pro Pro Pro Leu Ser Ala Pro
             100                 105                 110

Arg Val Pro Tyr His Ser Ser Val Leu Ser Val Thr Arg Pro Val Val
             115                 120                 125

Val Ser Ala Thr His Pro Thr Leu Pro Ser Ala His Gln Pro Pro Val
    130                 135                 140

Ile Pro Ala Thr His Pro Ala Leu Ser Arg Asp His Gln Ile Pro Val
145                 150                 155                 160

Ile Val Ala Asn Tyr Pro Asp Leu Pro Ser Ala Tyr Gln Pro Gly Ile
                165                 170                 175

Leu Ser Val Ser His Ser Ala Gln Pro Pro Ala His Gln Pro Pro Met
             180                 185                 190

Ile Ser Thr Lys Tyr Pro Glu Leu Phe Pro Ala His Gln Ser Pro Met
             195                 200                 205
```

Phe Pro Asp Thr Arg Val Ala Gly Thr Gln Thr Thr Thr His Leu Pro
    210   215   220

Gly Ile Pro Pro Asn His Ala Pro Leu Val Thr Thr Leu Gly Ala Gln
225   230   235   240

Leu Pro Pro Gln Ala Pro Asp Ala Leu Val Leu Arg Thr Gln Ala Thr
                245   250   255

Gln Leu Pro Ile Ile Pro Thr Ala Gln Pro Ser Leu Thr Thr Thr Ser
                260   265   270

Arg Ser Pro Val Ser Pro Ala His Gln Ile Ser Val Pro Ala Ala Thr
            275   280   285

Gln Pro Ala Ala Leu Pro Thr Leu Leu Pro Ser Gln Ser Pro Thr Asn
    290   295   300

Gln Thr Ser Pro Ile Ser Pro Thr His Pro His Ser Lys Ala Pro Gln
305   310   315   320

Ile Pro Arg Glu Asp Gly Pro Ser Pro Lys Leu Ala Leu Trp Leu Pro
                325   330   335

Ser Pro Ala Pro Thr Ala Ala Pro Thr Ala Leu Gly Glu Ala Gly Leu
                340   345   350

Ala Glu His Ser Gln Arg Asp Asp Arg Trp Leu Leu Val Ala Leu Leu
            355   360   365

Val Pro Thr Cys Val Phe Leu Val Val Leu Leu Ala Leu Gly Ile Val
    370   375   380

Tyr Cys Thr Arg Cys Gly Pro His Ala Pro Asn Lys Arg Ile Thr Asp
385   390   395   400

Cys Tyr Arg Trp Val Ile His Ala Gly Ser Lys Ser Pro Thr Glu Pro
                405   410   415

Met Pro Pro Arg Gly Ser Leu Thr Gly Val Gln Thr Cys Arg Thr Ser
                420   425   430

Val

<210> 3
<211> 1831
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (57)..(1700)

<400> 3
```
cagagttgcc cagggaaagc agctatgaca tctacagagt gcccagcagt cagagcatgg 60
aggatcgtgg gtacagcccc gacacgcgtg tggtccgctt cctcaagggc aagagcatcg 120
ggctgcggct ggcaggggggc aatgacgtgg gcatcttcgt gtccggggtg caggcgggca 180
gcccggccga cgggcagggc atccaggagg gagatcagat tctgcaggtg aatgacgtgc 240
cattccagaa cctgacacgg gaggaggcag tgcagttcct gctggggctg ccaccaggcg 300
aggagatgga gctggtgacg cagcggaagc aggacatttt ctggaaaatg gtgcagtccc 360
gcgtgggtga ctccttctac atccgcactc actttgagct ggagcccagt ccgccgtctg 420
gcctgggctt cacccgtggc gacgtcttcc acgtgctgga cacgctgcac cccggccccg 480
ggcagagcca cgcacgagga ggccactggc tggcggtgcg catgggtcgt gacctgcggg 540
agcaagagcg gggcatcatt cccaaccaga gcagggcgga gcagctggcc agcctggaag 600
ctgcccagag ggccgtggga gtcgggcccg gctcctccgc gggctccaat gctcgggccg 660
agttctggcg gctgcggggt ctgcgtcgag gagccaagaa gaccactcag cggagccgtg 720
aggacctctc agctctgacc cgacagggcc gctacccgcc ctacgaacga gtggtgttgc 780
gagaagccag tttcaagcgc ccggtagtga tcctgggacc cgtggccgac attgctatgc 840
agaagttgac tgctgagatg cctgaccagt ttgaaatcgc agagactgtg tccaggaccg 900
acagcccctc caagatcatc aaactagaca ccgtgcgggt gattgcagaa aaagacaagc 960
atgcgctcct ggatgtgacc ccctccgcca tcgagcgcct caactatgtg cagtactacc 1020
ccattgtggt cttcttcatc cccgagagcc ggccggccct caaggcactg cgccagtggc 1080
tggcgcctgc ctcccgccgc agcacccgtc gcctctacgc acaagcccag aagctgcgaa 1140
aacacagcag ccacctcttc acagccacca tccctctgaa tggcacgagt gacacctggt 1200
accaggagct caaggccatc attcgagagc agcagacgcg gcccatctgg acggcggaag 1260
atcagctgga tggctccttg gaggacaacc tagacctccc tcaccacggc ctggccgaca 1320
gctccgctga cctcagctgc gacagccgcg ttaacagcga ctacgagacg gacggcgagg 1380
gcggcgcgta cacggatggc gagggctaca cagacggcga ggggggggccc tacacggatg 1440
tggatgatga gccccggct ccagccctgg cccggtcctc ggagcccgtg caggcagatg 1500
agtcccagag cccgagggat cgtgggagaa tctcggctca tcaggggggcc caggtggaca 1560
gccgccaccc ccaggacag tggcgacagg acagcatgcg aacctatgaa cgggaagccc 1620
tgaagaaaaa gtttacgcga gtccatgatg cggagtcctc cgatgaagac ggctatgact 1680
ggggtccggc cactgacctg tgacctctcg cgggctgcca gctggtccgt cctccttctc 1740
cttccctggg gctgggactc agtttcccat acagaaccca caaccttacc tccctccgcc 1800
```

tggtctttaa taaacagagt attttcacag c   1831

<210> 4

<211> 548

<212> PRT

<213> Homo sapiens

<400> 4

Met Glu Asp Arg Gly Tyr Ser Pro Asp Thr Arg Val Val Arg Phe Leu
1   5   10   15

Lys Gly Lys Ser Ile Gly Leu Arg Leu Ala Gly Gly Asn Asp Val Gly
                20   25   30

Ile Phe Val Ser Gly Val Gln Ala Gly Ser Pro Ala Asp Gly Gln Gly
                35   40   45

Ile Gln Glu Gly Asp Gln Ile Leu Gln Val Asn Asp Val Pro Phe Gln
        50   55   60

Asn Leu Thr Arg Glu Glu Ala Val Gln Phe Leu Leu Gly Leu Pro Pro
65   70   75   80

Gly Glu Glu Met Glu Leu Val Thr Gln Arg Lys Gln Asp Ile Phe Trp
                85   90   95

Lys Met Val Gln Ser Arg Val Gly Asp Ser Phe Tyr Ile Arg Thr His
                100   105   110

Phe Glu Leu Glu Pro Ser Pro Ser Gly Leu Gly Phe Thr Arg Gly
        115   120   125

Asp Val Phe His Val Leu Asp Thr Leu His Pro Gly Pro Gly Gln Ser
        130   135   140

His Ala Arg Gly Gly His Trp Leu Ala Val Arg Met Gly Arg Asp Leu
145   150   155   160

Arg Glu Gln Glu Arg Gly Ile Ile Pro Asn Gln Ser Arg Ala Glu Gln
                165   170   175

Leu Ala Ser Leu Glu Ala Ala Gln Arg Ala Val Gly Val Gly Pro Gly
        180   185   190

Ser Ser Ala Gly Ser Asn Ala Arg Ala Glu Phe Trp Arg Leu Arg Gly
        195   200   205

Leu Arg Arg Gly Ala Lys Lys Thr Thr Gln Arg Ser Arg Glu Asp Leu

```
            210                    215                    220
Ser Ala Leu Thr Arg Gln Gly Arg Tyr Pro Pro Tyr Glu Arg Val Val
225                    230                    235                    240
Leu Arg Glu Ala Ser Phe Lys Arg Pro Val Val Ile Leu Gly Pro Val
                   245                    250                    255
Ala Asp Ile Ala Met Gln Lys Leu Thr Ala Glu Met Pro Asp Gln Phe
                   260                    265                    270
Glu Ile Ala Glu Thr Val Ser Arg Thr Asp Ser Pro Ser Lys Ile Ile
               275                    280                    285
Lys Leu Asp Thr Val Arg Val Ile Ala Glu Lys Asp Lys His Ala Leu
           290                    295                    300
Leu Asp Val Thr Pro Ser Ala Ile Glu Arg Leu Asn Tyr Val Gln Tyr
305                    310                    315                    320
Tyr Pro Ile Val Val Phe Phe Ile Pro Glu Ser Arg Pro Ala Leu Lys
                   325                    330                    335
Ala Leu Arg Gln Trp Leu Ala Pro Ala Ser Arg Arg Ser Thr Arg Arg
                   340                    345                    350
Leu Tyr Ala Gln Ala Gln Lys Leu Arg Lys His Ser Ser His Leu Phe
               355                    360                    365
Thr Ala Thr Ile Pro Leu Asn Gly Thr Ser Asp Thr Trp Tyr Gln Glu
           370                    375                    380
Leu Lys Ala Ile Ile Arg Glu Gln Gln Thr Arg Pro Ile Trp Thr Ala
385                    390                    395                    400
Glu Asp Gln Leu Asp Gly Ser Leu Glu Asp Asn Leu Asp Leu Pro His
                   405                    410                    415
His Gly Leu Ala Asp Ser Ser Ala Asp Leu Ser Cys Asp Ser Arg Val
               420                    425                    430
Asn Ser Asp Tyr Glu Thr Asp Gly Glu Gly Gly Ala Tyr Thr Asp Gly
               435                    440                    445
Glu Gly Tyr Thr Asp Gly Glu Gly Gly Pro Tyr Thr Asp Val Asp Asp
           450                    455                    460
Glu Pro Pro Ala Pro Ala Leu Ala Arg Ser Ser Glu Pro Val Gln Ala
465                    470                    475                    480
Asp Glu Ser Gln Ser Pro Arg Asp Arg Gly Arg Ile Ser Ala His Gln
                   485                    490                    495
Gly Ala Gln Val Asp Ser Arg His Pro Gln Gly Gln Trp Arg Gln Asp
```

```
              500                 505                 510
Ser Met Arg Thr Tyr Glu Arg Glu Ala Leu Lys Lys Lys Phe Thr Arg
            515                 520                 525
Val His Asp Ala Glu Ser Ser Asp Glu Asp Gly Tyr Asp Trp Gly Pro
          530                 535                 540
Ala Thr Asp Leu
545
```

<210> 5
<211> 1643
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (27)..(1643)

<400> 5
```
gcaaaaagcg aggcgacggc ttaaagatgg agaacgaccc ccaggaggcg gagtctgaaa 60
tggcccctgga tgctgagttc ctggacgtgt acaagaactg caacggggtg gtcatgatgt 120
tcgacattac caagcagtgg accttcaatt acattctccg ggagcttcca aaagtgccca 180
cccacgtgcc agtgtgcgtg ctgggaaact accgggacat gggcgagcac cgagtcatcc 240
tgccggacga cgtgcgtgac ttcatcgaca acctggacag acctccaggt tcctcctact 300
tccgctatgc tgagtcttcc atgaagaaca gcttcggcct aaagtacctt cataagttct 360
tcaatatccc atttttgcag cttcagaggg agacgctgtt gcggcagctg gagacgaacc 420
agctggacat ggacgccacg ctggaggagc tgtcggtgca gcaggagacg gaggaccaga 480
actacggcat cttcctggag atgatggagg ctcgcagccg tggccatgcg tccccactgg 540
cggccaacgg gcagagccca tccccgggct cccagtcacc agtggtgcct gcaggcgctg 600
tgtccacggg gagctgcagc cccggcacac cccagcccgc cccacagctg cccctcaatg 660
ccgccccacc atcctctgtg cccctgtac caccctcaga ggccctgccc ccacctgcgt 720
gccctcagc ccccgcccca cggcgcagca tcatctctag gctgtttggg acgtcacctg 780
ccaccgaggc agcccctcca cctccagagc cagtcccggc cgcacagggc ccagcaacgg 840
tccagagtgt ggaggacttt gttcctgacg accgcctgga ccgcagcttc ctggaagaca 900
caacccccgc cagggacgag aagaaggtgg gggccaaggc tgcccagcag acagcgaca 960
gtgatgggga ggccctgggc ggcaacccga tggtggcagg gttccaggac gatgtggacc 1020
```

```
tcgaagacca gccacgtggg agtcccccgc tgcctgcagg ccccgtcccc agtcaagaca 1080
tcactctttc gagtgaggag gaagcagaag tggcagctcc cacaaaaggc cctgccccag 1140
ctccccagca gtgctcagag ccagagacca agtggtcctc cataccagct tcgaagccac 1200
ggagggggac agctcccacg aggaccgcag cacccccctg gccaggcggt gtctctgttc 1260
gcacaggtcc ggagaagcgc agcagcacca ggccccctgc tgagatggag ccggggaagg 1320
gtgagcaggc ctcctcgtcg gagagtgacc ccgagggacc cattgctgca caaatgctgt 1380
ccttcgtcat ggatgacccc gactttgagg gcgagggatc agacacacag cgcaggcgg 1440
atgactttcc cgtgcgagat gacccctccg atgtgactga cgaggatgag ggccctgccg 1500
agccgccccc accccccaag ctccctctcc ccgccttcag actgaagaat gactcggacc 1560
tcttcgggct ggggctggag gaggccggac ccaaggagag cagtgaggaa ggtaaggagg 1620
gcaaaacccc ctctaaggag aag                                       1643
```

<210> 6
<211> 539
<212> PRT
<213> Homo sapiens

<400> 6

```
Met Glu Asn Asp Pro Gln Glu Ala Glu Ser Glu Met Ala Leu Asp Ala
1               5                   10                  15
Glu Phe Leu Asp Val Tyr Lys Asn Cys Asn Gly Val Val Met Met Phe
                20                  25                  30
Asp Ile Thr Lys Gln Trp Thr Phe Asn Tyr Ile Leu Arg Glu Leu Pro
            35                  40                  45
Lys Val Pro Thr His Val Pro Val Cys Val Leu Gly Asn Tyr Arg Asp
        50                  55                  60
Met Gly Glu His Arg Val Ile Leu Pro Asp Asp Val Arg Asp Phe Ile
65                  70                  75                  80
Asp Asn Leu Asp Arg Pro Pro Gly Ser Ser Tyr Phe Arg Tyr Ala Glu
                85                  90                  95
Ser Ser Met Lys Asn Ser Phe Gly Leu Lys Tyr Leu His Lys Phe Phe
                100                 105                 110
Asn Ile Pro Phe Leu Gln Leu Gln Arg Glu Thr Leu Leu Arg Gln Leu
            115                 120                 125
Glu Thr Asn Gln Leu Asp Met Asp Ala Thr Leu Glu Glu Leu Ser Val
```

```
            130                    135                    140
Gln Gln Glu Thr Glu Asp Gln Asn Tyr Gly Ile Phe Leu Glu Met Met
145                    150                    155                    160
Glu Ala Arg Ser Arg Gly His Ala Ser Pro Leu Ala Ala Asn Gly Gln
                    165                    170                    175
Ser Pro Ser Pro Gly Ser Gln Ser Pro Val Val Pro Ala Gly Ala Val
                    180                    185                    190
Ser Thr Gly Ser Cys Ser Pro Gly Thr Pro Gln Pro Ala Pro Gln Leu
                    195                    200                    205
Pro Leu Asn Ala Ala Pro Pro Ser Ser Val Pro Pro Val Pro Pro Ser
            210                    215                    220
Glu Ala Leu Pro Pro Pro Ala Cys Pro Ser Ala Pro Ala Pro Arg Arg
225                    230                    235                    240
Ser Ile Ile Ser Arg Leu Phe Gly Thr Ser Pro Ala Thr Glu Ala Ala
                    245                    250                    255
Pro Pro Pro Pro Glu Pro Val Pro Ala Ala Gln Gly Pro Ala Thr Val
                    260                    265                    270
Gln Ser Val Glu Asp Phe Val Pro Asp Asp Arg Leu Asp Arg Ser Phe
                    275                    280                    285
Leu Glu Asp Thr Thr Pro Ala Arg Asp Glu Lys Lys Val Gly Ala Lys
            290                    295                    300
Ala Ala Gln Gln Asp Ser Asp Ser Asp Gly Glu Ala Leu Gly Gly Asn
305                    310                    315                    320
Pro Met Val Ala Gly Phe Gln Asp Asp Val Asp Leu Glu Asp Gln Pro
                    325                    330                    335
Arg Gly Ser Pro Pro Leu Pro Ala Gly Pro Val Pro Ser Gln Asp Ile
                    340                    345                    350
Thr Leu Ser Ser Glu Glu Glu Ala Glu Val Ala Ala Pro Thr Lys Gly
            355                    360                    365
Pro Ala Pro Ala Pro Gln Gln Cys Ser Glu Pro Glu Thr Lys Trp Ser
            370                    375                    380
Ser Ile Pro Ala Ser Lys Pro Arg Arg Gly Thr Ala Pro Thr Arg Thr
385                    390                    395                    400
Ala Ala Pro Pro Trp Pro Gly Gly Val Ser Val Arg Thr Gly Pro Glu
                    405                    410                    415
Lys Arg Ser Ser Thr Arg Pro Pro Ala Glu Met Glu Pro Gly Lys Gly
```

```
              420                 425                 430
Glu Gln Ala Ser Ser Ser Glu Ser Asp Pro Glu Gly Pro Ile Ala Ala
          435                 440                 445
Gln Met Leu Ser Phe Val Met Asp Asp Pro Asp Phe Glu Gly Glu Gly
       450                 455                 460
Ser Asp Thr Gln Arg Arg Ala Asp Asp Phe Pro Val Arg Asp Asp Pro
465                 470                 475                 480
Ser Asp Val Thr Asp Glu Asp Glu Gly Pro Ala Glu Pro Pro Pro Pro
                485                 490                 495
Pro Lys Leu Pro Leu Pro Ala Phe Arg Leu Lys Asn Asp Ser Asp Leu
          500                 505                 510
Phe Gly Leu Gly Leu Glu Glu Ala Gly Pro Lys Glu Ser Ser Glu Glu
       515                 520                 525
Gly Lys Glu Gly Lys Thr Pro Ser Lys Glu Lys
   530                 535
```

<210> 7
<211> 1673
<212> DNA
<213> Homo sapiens

<400> 7

```
aatcatgtta gattttctga gagtgaaaac acctgccatc tacaaattac aaggctggat 60
aacagctcac tccatttgaa attcagtgga aacccaagag ctaggttctt actgaatttg 120
catctcaatt tgggaaactg aacttagctt tcaaagatca taggaagtct ggttggagaa 180
actagggatt attctggcaa tgggtgcagg aaggtggtca gaataaccca gtcgccattg 240
gtttttgagaa acggaactat cttatgcaga gcccggaggg caagtctcag acccatgggt 300
tgaagccatg gagaaggaaa tttggatcca atgtaatgaa gcgctttcta agtcagaatt 360
tccctgcaat ggtgtggcct gattcaataa aaattaagaa taataaatat aatggaaaaa 420
aatctccact gattgagtgt ttacttggtg ccaagcacta tgctaagttg ttcattattt 480
tatttaattg ttacagcaat tttgagtatg catctttcac tattttataa gtggaaaaga 540
gaagtgcccc caaaaagtta gagctcaaac agcagcttat tctaccagcc cctgctcttg 600
cggaggcctc tggaaaagac ctgaatgaca cctattggag aatcacatct acaagggggct 660
tcaaacagac caaatagatc atcacctctg tggtcccttg ttaactatat gttctgagac 720
aaaggaaagc taccctaagg gttagttaac ctttgctgag gaaatttaca ttcatactta 780
```

```
gagtgaatta ctcaggtgtg cttaggtgtg caaaagggaa ggagacctga attcaccaag 840
ttaaatcttg ctaaacctta tcataagcat tttttgagcg cttagcatac accaagcctt 900
gtggaaggtg ctttcctgcc atatctcatt taatcctcac agcaaaccta tagaatatgg 960
cattatcgtc tgagtctcac agaagtttag tcgtgtactc aaggtcttac cagctagtga 1020
acagcagacc aagactggaa acccaggata gtctgatacc tgagccatct cttcttgtgc 1080
tacgcctagt tattctgtcc cccaaatcaa aaggcatgac ctttataaga ggcgctttac 1140
tgacaatagc tgcaatttta actttgaaaa tgattcagaa ttatcaaaga tagtagattc 1200
gaatgacatg attgtctata atctcgctag ccttgtactg tgtgtgcata gcaattacag 1260
ggaagtaatc tagctcctga ctattatgtc gaactatgtc gctgcttttt acaaacttgt 1320
cttgatccaa agcagtcaca atgataaccc tgcatatctg gaatcataa gtcaactatg 1380
tatccctgtg tgtgtatata tatgtatgta tgtatctatt ttcaaactgt gatttaatat 1440
ttaaatattc ctactgccat ttttgtgact gaaaaactac acatgaggaa acgtcttaga 1500
attttccaat agaggaaaaa taacacttgg gcaatctgtc atgtttcaca acagttctca 1560
tttttctcat gatttgtgta gcgtggaatg tgtttgctca atgtgaaggg ttttcattgc 1620
tcaatttctc tgtgtaagtc ttttccttaa ggtaataaac catcagcaaa gtc        1673
```

```
<210> 8
<211> 1712
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (485)..(1249)

<400> 8
ctcacgcagc caacatggct ccagtggagc acgttgtggc ggatgctggg gctttcctgc 60
ggcatgcggc tctgcaggac atcgggaaga acatttacac catccgggag gtggtcactg 120
agattcggga caaggccaca cgcaggcggc tcgctgtcct gccctacgag ctgcggttca 180
aggagccctt accggaatac gtgcggctgg tgactgagtt ttcaaagaaa acaggagact 240
accccagcct ctctgccacg gacatccaag tgttgcactc acataccagt tggaagcaga 300
gtttgttggg gtgtctcacc taaaacaaga accacagaag gttaaggtga gctcatcgat 360
tcagcaccca gaaacacctc tgcacatttc tggtttccat ctgccctaca agcctaaacc 420
cccacaagaa acagaaaaag gacactcagc ttgtgagcct gagaacctgg aatttagttc 480
cttcatgttc tggagaaacc ctttgcccaa catcgatcat gaactgcagg agctgctgat 540
```

```
tgacagaggt gaggacgttc caagtgagga ggaggaggag gaagaaaacg ggtttgaaga 600
cagaaaagat gacagcgatg acgacggggg tggctggata accccccagta acatcaagca 660
gatccagcag gagctggagc agtgtgacgt ccccgaggac gtgcgggttg gctgcctgac 720
cacagacttc gccatgcaga atgttctgct gcagatgggg ctgcacgtgc tggcggtgaa 780
cggcatgctg attcgtgagg cccggagcta catcttgcgc tgccatggct gtttcaagac 840
aacgtctgac atgagccgag tgttctgctc acactgtggg aacaagaccc tgaagaaagt 900
gtccgtgacc gtcagcgacg acggcaccct gcacatgcac ttctcccgca accccaaggt 960
gctgaacccc cgcggcctcc ggtactcgct tcccactccc aaaggggggca aatacgccat 1020
caaccccat ctcaccgagg atcagcgctt ccctcagctg cgactctccc aaaaggccag 1080
gcagaaaacc aacgtgttcg cccctgacta catcgccggg gtgtcaccct ttgtcgagaa 1140
tgacatctcc agccgctcag ctaccctgca ggtccgggac agcaccttgg gagctgggcg 1200
gagacgctta aatcccaacg cttccagaaa gaagtttgtg aagaaaaggt gaagagcgag 1260
ttcccgcagg caaattggat gggcgtctgg ccgccgtgga gttccggtga cccatttccc 1320
cagccgtgtc gtctccagga ccacccgatg gaaataacag gcgggcttca cggtgcggct 1380
ctgtccgccc atgccccgct gggtctgcag ggaactggac tgtcccatgg cctgtgagca 1440
ccggagcgcc tggctgcctg ccaaggaagt gcaattgcat aaaaacagaa agaacaacgc 1500
cctggagcca atcttcaaga aaggaatttc caaaggataa tattttttcta ataaatgcgg 1560
ctgcaacctc ctgtgcattt aattaaatag gccaaatttt tgctgcttag gtcatctcaa 1620
ggctgatact tgagctgtgt gcccagagat catgcattta gatttatatt tttgccagaa 1680
aatacaaggt tataataaaa ctaagaacta cc                               1712
```

<210> 9
<211> 255
<212> PRT
<213> Homo sapiens

<400> 9

```
Met Phe Trp Arg Asn Pro Leu Pro Asn Ile Asp His Glu Leu Gln Glu
1               5                   10                  15
Leu Leu Ile Asp Arg Gly Glu Asp Val Pro Ser Glu Glu Glu Glu Glu
                20                  25                  30
Glu Glu Asn Gly Phe Glu Asp Arg Lys Asp Asp Ser Asp Asp Asp Gly
            35                  40                  45
Gly Gly Trp Ile Thr Pro Ser Asn Ile Lys Gln Ile Gln Gln Glu Leu
        50                  55                  60
```

```
Glu Gln Cys Asp Val Pro Glu Asp Val Arg Val Gly Cys Leu Thr Thr
65                  70                  75                  80
Asp Phe Ala Met Gln Asn Val Leu Leu Gln Met Gly Leu His Val Leu
                85                  90                  95
Ala Val Asn Gly Met Leu Ile Arg Glu Ala Arg Ser Tyr Ile Leu Arg
                100                 105                 110
Cys His Gly Cys Phe Lys Thr Thr Ser Asp Met Ser Arg Val Phe Cys
            115                 120                 125
Ser His Cys Gly Asn Lys Thr Leu Lys Lys Val Ser Val Thr Val Ser
        130                 135                 140
Asp Asp Gly Thr Leu His Met His Phe Ser Arg Asn Pro Lys Val Leu
145                 150                 155                 160
Asn Pro Arg Gly Leu Arg Tyr Ser Leu Pro Thr Pro Lys Gly Gly Lys
                165                 170                 175
Tyr Ala Ile Asn Pro His Leu Thr Glu Asp Gln Arg Phe Pro Gln Leu
                180                 185                 190
Arg Leu Ser Gln Lys Ala Arg Gln Lys Thr Asn Val Phe Ala Pro Asp
            195                 200                 205
Tyr Ile Ala Gly Val Ser Pro Phe Val Glu Asn Asp Ile Ser Ser Arg
    210                 215                 220
Ser Ala Thr Leu Gln Val Arg Asp Ser Thr Leu Gly Ala Gly Arg Arg
225                 230                 235                 240
Arg Leu Asn Pro Asn Ala Ser Arg Lys Lys Phe Val Lys Lys Arg
                245                 250                 255
```

<210> 10
<211> 1993
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (13)..(981)

<400> 10

```
ccagattacc tgatgcagct gatgaacgac aagaagctca tgagcagcct gcccaacttc 60
tgcgggatct tcaaccacct cgagcggctg ctggacgaag aaattagcag agtacggaaa 120
gacatgtaca atgacacatt aaatggcagt acagagaaaa ggagtgcaga attgcctgat 180
gctgtgggac ctattgttca gttacaagag aaactttatg tgcctgtaaa agaataccca 240
gattttaatt ttgttgggag aatccttgga cctagaggac ttacagccaa acaacttgaa 300
gcagaaaccg gatgtaaaat catggtccga ggcaaaggct caatgaggga taaaaaaaag 360
gaggagcaaa atagaggcaa gcccaattgg gagcatctaa atgaagattt acatgtacta 420
atcactgtgg aagatgctca gaacagagca gaaatcaaat tgaagagagc agttgaagaa 480
gtgaagaaat tattggtacc tgcagcagaa ggagaagaca gcctgaagaa gatgcagctg 540
atggagcttg cgattctgaa tggcacctac agagatgcca acattaaatc accagccctt 600
gccttttctc ttgcagcaac agcccaggct gctccaagga tcattactgg gcctgcgccg 660
gttctcccac cagctgccct gcgtactcct acgccagctg gccctaccat aatgcctttg 720
atcagacaaa tacagaccgc tgtcatgcca aacggaactc ctcacccaac tgctgcaata 780
gttcctccag ggcccgaagc tggtttaatc tatacaccct atgagtaccc ctacacattg 840
gcaccagcta catcaatcct tgagtatcct attgaaccta gtggtgtatt aggtgcggtg 900
gctactaaag ttcgaaggca cgatatgcgt gtccatcctt accaaaggat tgtgaccgca 960
gaccgagccg ccaccggcaa ctaacctatg accttctgac ctctgaactc ttcacccaat 1020
gatgacctga ccatgcctgc ctgctgatca gttaactggt aatcgccttt gcttgcctgt 1080
cgtcagtgca gcgagctgag gcacttgtcc gttcgtctta ccatctaacc aaacaaaaga 1140
caaagaaatt gttgtcctcc aactcagctt tttttttttt tttttcctgt ttgggtgaaa 1200
gtggttctag aaactgcact gaatagtagt aaagcaataa ggcccaattc atcccacagc 1260
actgatcatc ttttaatatc ccaccctaag cgaacggtaa gaaggcctct cttaagaagg 1320
ggagacagat ggtccttaac tactcaatga cagaggcagt tactgtgaga gacttctagg 1380
aatcttttc ttctcatagc gaagtcaaag ctctctctga atgtactgtg tgatgatgca 1440
tcatgcatga accttcggtc agggatatca ttggtgaagt gatttcaaaa agtattcaaa 1500
atttgatatg ctgtttagtc actacagtgc cctcaaaggg cagaagttgc agcctttttt 1560
atattgcctg ccaaaatttg aagtattaga agaaagtgtg ccatgagaga aaaacttaag 1620
gagttttgaa aagtaatgca aataacaaaa ctgcaacact atttttaaaa agataaatat 1680
ctgagttaaa attactgaat ctttatttta cacctaaaaa aatatgagaa caaggtacat 1740
gcattatgtg tcacattact gggcaaactg ttcaagtatt ttttttaaa cctccctgta 1800
tagaaaaaaa tcattaagga tgtaaaagcc atgcttgcct atttgctgta tacatgtaat 1860
gaaattgtag ataaagtgta gtgcattgaa acaaatgaac aaaaagtaga tacttttact 1920
atacaagggt gctggtgcag aaaaaaatat atatatttt ggaaatgtag catttttatac 1980
tttcaagtgt tat                                                   1993
```

<210> 11
<211> 323
<212> PRT
<213> Homo sapiens

<400> 11
Met Gln Leu Met Asn Asp Lys Lys Leu Met Ser Ser Leu Pro Asn Phe
1   5   10   15
Cys Gly Ile Phe Asn His Leu Glu Arg Leu Leu Asp Glu Glu Ile Ser
                20   25   30
Arg Val Arg Lys Asp Met Tyr Asn Asp Thr Leu Asn Gly Ser Thr Glu
            35   40   45
Lys Arg Ser Ala Glu Leu Pro Asp Ala Val Gly Pro Ile Val Gln Leu
        50   55   60
Gln Glu Lys Leu Tyr Val Pro Val Lys Glu Tyr Pro Asp Phe Asn Phe
65   70   75   80
Val Gly Arg Ile Leu Gly Pro Arg Gly Leu Thr Ala Lys Gln Leu Glu
                85   90   95
Ala Glu Thr Gly Cys Lys Ile Met Val Arg Gly Lys Gly Ser Met Arg
                100   105   110
Asp Lys Lys Lys Glu Glu Gln Asn Arg Gly Lys Pro Asn Trp Glu His
            115   120   125
Leu Asn Glu Asp Leu His Val Leu Ile Thr Val Glu Asp Ala Gln Asn
        130   135   140
Arg Ala Glu Ile Lys Leu Lys Arg Ala Val Glu Glu Val Lys Lys Leu
145   150   155   160
Leu Val Pro Ala Ala Glu Gly Glu Asp Ser Leu Lys Lys Met Gln Leu
                165   170   175
Met Glu Leu Ala Ile Leu Asn Gly Thr Tyr Arg Asp Ala Asn Ile Lys
                180   185   190
Ser Pro Ala Leu Ala Phe Ser Leu Ala Ala Thr Ala Gln Ala Ala Pro
            195   200   205
Arg Ile Ile Thr Gly Pro Ala Pro Val Leu Pro Pro Ala Ala Leu Arg
    210   215   220
Thr Pro Thr Pro Ala Gly Pro Thr Ile Met Pro Leu Ile Arg Gln Ile
225   230   235   240

Gln Thr Ala Val Met Pro Asn Gly Thr Pro His Pro Thr Ala Ala Ile
                    245   250   255
Val Pro Pro Gly Pro Glu Ala Gly Leu Ile Tyr Thr Pro Tyr Glu Tyr
                260   265   270
Pro Tyr Thr Leu Ala Pro Ala Thr Ser Ile Leu Glu Tyr Pro Ile Glu
            275   280   285
Pro Ser Gly Val Leu Gly Ala Val Ala Thr Lys Val Arg Arg His Asp
        290   295   300
Met Arg Val His Pro Tyr Gln Arg Ile Val Thr Ala Asp Arg Ala Ala
305   310   315   320
Thr Gly Asn

<210> 12
<211> 1570
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (101)..(1147)

<400> 12
acgatttgaa cgctctgcct tgcagctctt ctggaccgag gagcccaaag ccctaccctc 60
accattcacc aggttacagt tcttatccac gtgaatacac atggctctgt tacgaaaaat 120
taatcaggtg ctgctgttcc ttctgatcgt gaccctctgt gtgattctgt ataagaaagt 180
tcataagggg actgtgccca agaatgacac agatgatgaa tccgagactc ctgaagaact 240
ggaagaagag attcctgtgg tgatttgtgc tgcagcaggg aggatgggtg ccactatggc 300
tgccatcaat agcttctaca gcaacactga cgccaacatc ttgttctatg tagtgggact 360
ccggaatact ctgactcgaa tacgaaaatg gattgaacat ccaaactga gagaaataaa 420
ctttaaaatc gtggaattca acccgatggt cctcaaaggg aagatcagac cagactcatc 480
gaggcctgaa ttgctccagc ctctgaactt tgttcgattt tatctccctc tacttatcca 540
ccaacacgag aaagtcatct atttggacga tgatgtaatt gtacaaggtg atatccaaga 600
actgtatgac accaccttgg ccctgggcca cgcggcggct ttctcagatg actgcgattt 660
gccctctgct caggacataa acagactcgt gggacttcag aacacatata tgggctatct 720

```
ggactaccgg aagaaggcca tcaaggacct tggcatcagc cccagcacct gctctttcga 780
tcctggtgtg attgttgcca acatgacaga atggaagcac cagcgcatca ccaagcaatt 840
ggagaaatgg atgcaaaaga atgtggagga aaacctctat agcagctccc tgggaggagg 900
ggtggccacc tccccaatgc tgattgtgtt tcatgggaaa tattccacaa ttaaccccct 960
gtggcacata aggcacctgg gctggaatcc agatgccaga tattcggagc attttctgca 1020
ggaagctaaa ttactccact ggaatggaag acataaacct tgggacttcc ctagtgttca 1080
caacgactta tgggaaagct ggtttgttcc tgaccctgca gggatattta aactcaatca 1140
ccatagctga tataactcta cccttaaaat attccctgta tagaaatgtg gaattgtccc 1200
tttgtagcca actataacat tgttctttat gaatattacc tttgatacat atgatccaca 1260
atataaaaac caaaaactac tgtgtgcaaa ttataccttg gaccatatag gcattgatta 1320
acttctttaa gtacatgtga taactatgga aatcaagatt atgtgactga aaaacataaa 1380
ggaagagacc catctagata acagcaatca acctgcttaa ttctgaatga caattatatc 1440
cacaaatttt taaaacttct acatgtattt ttcacatgaa gatctcctta acaggttgcc 1500
aacctttct tttataaaac tattacattt aaaatatgga cgtctgaaaa ataaaatatt 1560
catcattttt                                                      1570
```

<210> 13

<211> 349

<212> PRT

<213> Homo sapiens

<400> 13

```
Met Ala Leu Leu Arg Lys Ile Asn Gln Val Leu Leu Phe Leu Leu Ile
1               5                   10                  15
Val Thr Leu Cys Val Ile Leu Tyr Lys Lys Val His Lys Gly Thr Val
                20                  25                  30
Pro Lys Asn Asp Thr Asp Asp Glu Ser Glu Thr Pro Glu Glu Leu Glu
            35                  40                  45
Glu Glu Ile Pro Val Val Ile Cys Ala Ala Ala Gly Arg Met Gly Ala
        50                  55                  60
Thr Met Ala Ala Ile Asn Ser Phe Tyr Ser Asn Thr Asp Ala Asn Ile
65                  70                  75                  80
Leu Phe Tyr Val Val Gly Leu Arg Asn Thr Leu Thr Arg Ile Arg Lys
                85                  90                  95
Trp Ile Glu His Ser Lys Leu Arg Glu Ile Asn Phe Lys Ile Val Glu
```

```
                  100                      105                      110
Phe Asn Pro Met Val Leu Lys Gly Lys Ile Arg Pro Asp Ser Ser Arg
            115                      120                      125
Pro Glu Leu Leu Gln Pro Leu Asn Phe Val Arg Phe Tyr Leu Pro Leu
        130                      135                    140
Leu Ile His Gln His Glu Lys Val Ile Tyr Leu Asp Asp Asp Val Ile
145                      150                      155                      160
Val Gln Gly Asp Ile Gln Glu Leu Tyr Asp Thr Thr Leu Ala Leu Gly
                165                      170                      175
His Ala Ala Ala Phe Ser Asp Asp Cys Asp Leu Pro Ser Ala Gln Asp
            180                      185                      190
Ile Asn Arg Leu Val Gly Leu Gln Asn Thr Tyr Met Gly Tyr Leu Asp
            195                      200                      205
Tyr Arg Lys Lys Ala Ile Lys Asp Leu Gly Ile Ser Pro Ser Thr Cys
        210                      215                      220
Ser Phe Asp Pro Gly Val Ile Val Ala Asn Met Thr Glu Trp Lys His
225                      230                      235                      240
Gln Arg Ile Thr Lys Gln Leu Glu Lys Trp Met Gln Lys Asn Val Glu
                245                      250                      255
Glu Asn Leu Tyr Ser Ser Ser Leu Gly Gly Gly Val Ala Thr Ser Pro
            260                      265                      270
Met Leu Ile Val Phe His Gly Lys Tyr Ser Thr Ile Asn Pro Leu Trp
            275                      280                      285
His Ile Arg His Leu Gly Trp Asn Pro Asp Ala Arg Tyr Ser Glu His
        290                      295                      300
Phe Leu Gln Glu Ala Lys Leu Leu His Trp Asn Gly Arg His Lys Pro
305                      310                      315                      320
Trp Asp Phe Pro Ser Val His Asn Asp Leu Trp Glu Ser Trp Phe Val
                325                      330                      335
Pro Asp Pro Ala Gly Ile Phe Lys Leu Asn His His Ser
            340                      345
```

<210> 14
<211> 1962
<212> DNA

<213> Homo sapiens

<220>
<221> CDS
<222> (213)..(938)

<400> 14
agtgcgcatc cggacgtagg aggtggaggt tgtggaattc gccgttcgaa agcagggact 60
aaaagcccca cttcgtctta cgttccgaaa ggaaggcgtc tgttgagcct ttctctcagt 120
cgtgagggag gcgtcgacgg cgtgcggaag tcctgagttg aggcttgcgg gatcctttcc 180
ggagaaagcg caggctaaag ccgcaggtga agatgtccaa ctacgtgaac gacatgtggc 240
cgggctcgcc gcaggagaag gattcgccct cgacctcgcg gtcgggcggg tccagccggc 300
tgtcgtcgcg gtctaggagc cgctcttttt ccagaagctc tcggtcccat tcccgcgtct 360
cgagccggtt ttcgtccagg agtcggagga gcaagtccag gtcccgttcc cgaaggcgcc 420
accagcggaa gtacaggcgc tactcgcggt catactcgcg gagccggtcg cgatcccgca 480
gccgccgtta ccgagagagg cgctacgggt tcaccaggag atactaccgg tctccttcgc 540
ggtaccggtc ccggtcccgt agcaggtcgc gctctcgggg aaggtcgtac tgcggaaggg 600
cgtacgcgat cgcgcgggga cagcgctact acggctttgg tcgcacagtg tacccggagg 660
agcacagcag atggagggac agatccagga cgaggtcgcg gagcagaacc cccttcgct 720
taagtgaaaa agatcgaatg gagctgttag aaatagcaaa aaccaatgca gcgaaagctc 780
taggaacaac caacattgac ttgccagcta gtctcagaac tgttccttca gccaaagaaa 840
caagccgtgg aataggtgta tcaagtaatg gtgcaaagcc tgaagtaagt attctaggtt 900
tgtcggaaca aaactttcag aaagccaact gtcaaatctg attagccact tatatcttag 960
actatacttt ttgggaagtc tagagatgta tataatgtgc taaattcaaa gtagcaaatc 1020
tgaagatagg caatgtcaaa cccatgaaaa tgggagatta atgagcttta tttggccgtg 1080
catggtgcct catgcctgta atgaggcaga tggcttgagt ccaggagttc aagactagcc 1140
tgggcaatgt ggcaaaaccg cgtgtttaca aaaaatacaa aaattagcca ggcatggtgg 1200
tgcatgcctg tagtcccagc tgtttgggag gctgaggcag gaggatcttt gagcctagga 1260
tgctaaggtt gcagtgagcc aagatggcac cattgcactc tagcctgggc agcagagcga 1320
gaccctgtct caaaaaatac atttattttt ttcattttca gttaacagtg tactcttata 1380
acaccgttat tagctggtac tttggtgatt tctattacta gttttttctaa gctatttaca 1440
gagtgtttgt agctttcatt tgcagcatta tgttcccaca aattctgtac tcagcatata 1500
cagtatagtt tatctgctct atttctgtct tatagaaatc atgaatgtgg tctgcagaca 1560
ttgatgaaga aaatctgttg gtaattgata catgggctaa agcatcagag gtttaatttg 1620
aagtttatgt tcacacactg aaaacttagt ttttttgttg gtagatccat gtgcatgcta 1680
gaatttggga caggcactat ttgcataaag tattaaagtc aattttttaaa ctaagcaaag 1740

```
gtacacgttg taacggtggg gcatctgtga aaaagatgtc cctttcataa tatatgcaat 1800
atattccaga tgttttgaga gattacagaa gaggaggcct gcttcacttg cagataagtt 1860
tattataatt ctccagaaat gtgcaggatg tgcattagca aattgcactg tacttttcac 1920
tccagcctgg gtgacagagc aagactcccg tctcggggggc tt                  1962
```

<210> 15
<211> 242
<212> PRT
<213> Homo sapiens

<400> 15

```
Met Ser Asn Tyr Val Asn Asp Met Trp Pro Gly Ser Pro Gln Glu Lys
 1               5                  10                  15

Asp Ser Pro Ser Thr Ser Arg Ser Gly Gly Ser Ser Arg Leu Ser Ser
             20                  25                  30

Arg Ser Arg Ser Arg Ser Phe Ser Arg Ser Ser Arg Ser His Ser Arg
         35                  40                  45

Val Ser Ser Arg Phe Ser Ser Arg Ser Arg Arg Ser Lys Ser Arg Ser
     50                  55                  60

Arg Ser Arg Arg Arg His Gln Arg Lys Tyr Arg Arg Tyr Ser Arg Ser
 65                  70                  75                  80

Tyr Ser Arg Ser Arg Ser Arg Ser Arg Ser Arg Arg Tyr Arg Glu Arg
                 85                  90                  95

Arg Tyr Gly Phe Thr Arg Arg Tyr Tyr Arg Ser Pro Ser Arg Tyr Arg
                 100                 105                 110

Ser Arg Ser Arg Ser Arg Ser Arg Ser Arg Gly Arg Ser Tyr Cys Gly
         115                 120                 125

Arg Ala Tyr Ala Ile Ala Arg Gly Gln Arg Tyr Tyr Gly Phe Gly Arg
     130                 135                 140

Thr Val Tyr Pro Glu Glu His Ser Arg Trp Arg Asp Arg Ser Arg Thr
145                 150                 155                 160

Arg Ser Arg Ser Arg Thr Pro Phe Arg Leu Ser Glu Lys Asp Arg Met
                 165                 170                 175

Glu Leu Leu Glu Ile Ala Lys Thr Asn Ala Ala Lys Ala Leu Gly Thr
             180                 185                 190
```

Thr Asn Ile Asp Leu Pro Ala Ser Leu Arg Thr Val Pro Ser Ala Lys
       195   200   205

Glu Thr Ser Arg Gly Ile Gly Val Ser Ser Asn Gly Ala Lys Pro Glu
    210   215   220

Val Ser Ile Leu Gly Leu Ser Glu Gln Asn Phe Gln Lys Ala Asn Cys
225   230   235   240

Gln Ile

<210> 16
<211> 3553
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1699)..(2994)

<400> 16
aggggcgggc gcgccgctgc atccccatcc tcgtcgtcgc ccggcacagc gcgagcgggc 60
gagcggcgcg ggcggccgga gcgccgaggc ccggccatgg ccaccaccag caccacgggc 120
tccaccctgc tgcagcccct cagcaacgcc gtgcagctgc ccatcgacca ggtcaacttt 180
gtagtgtgcc aactctttgc cttgctagca gccatttggt ttcgaactta tctacattca 240
agcaaaacta gctcttttat aagacatgta gttgctaccc ttttgggcct ttatcttgca 300
ctttttttgct ttggatggta tgccttacac tttcttgtac aaagtggaat ttcctactgt 360
atcatgatca tcataggagt ggagaacatg cacaattact gctttgtgct gatgaatccc 420
ctaatgattt tggtaaaaat cattaagtta aggtggatac acatcttgtc atatgatcaa 480
atggtttcgc gaaaaatcaa taatcagaca acaagatgtg cgaactcgat attttacacg 540
actctctttta ccaattctgc cccgaattac acttaaaacg actcaacagc ttaacgttgg 600
cttgccacgc attacttgac tgtaaaactc tcactcttac cgaacttggc cgtaacctgc 660
caaccaaagc gagaacaaaa cataacatca aacgaatcga ccgattgtta ggtaatcgtc 720
acctccacaa agagcgactc gctgtatacc gttggcatgc tagctttatc tgttcgggca 780
atacgatgcc cattgtactt gttgactggt ctgatattcg tgagcaaaaa cgacttatgg 840
tattgcgagc ttcagtcgca ctacacggtc gttctgttac tctttatgag aaagcgttcc 900
cgctttcaga gcaatgttca aagaaagctc atgaccaatt tctagccgac cttgcgagca 960

```
ttctaccgag taacaccaca ccgctcattg tcagtgatgc tggctttaaa gtgccatggt 1020
ataaatccgt tgagaagctg ggttggtact ggttaagtcg agtaagagga aaagtacaat 1080
atgcagacct aggagcggaa aactggaaac ctatcagcaa cttacatgat atgtcatcta 1140
gtcactcaaa gactttaggc tataagaggc tgactaaaag caatccaatc tcatgccaaa 1200
ttctattgta taaatctcgc tctaaaggcc gaaaaaatca gcgctcgaca cggactcatt 1260
gtcaccaccc gtcacctaaa atctactcag cgtcggcaaa ggagccatgg gttctagcaa 1320
ctaacttacc tgttgaaatt cgaacaccca aacaacttgt taatatctat tcgaagcgaa 1380
tgcagattga agaaaccttc cgagacttga aaagtcctgc ctacggacta ggcctacgcc 1440
atagccgaac gagcagctca gagcgttttg atatcatgct gctaatcgcc ctgatgcttc 1500
aactaacatg ttggcttgcg ggcgttcatg ctcagaaaca aggttgggac aagcacttcc 1560
aggctaacac agtcagaaat cgaaacgtac tctcaacagt tcgcttaggc atggaagttt 1620
tgcggcattc tggctacaca ataacaaggg aagacttact cgtggctgca accctactag 1680
ctcaaaattt attcacacat ggttacgctt tggggaaatt atgaggggat ctctcagtgc 1740
tttgtgtttg ctctgggata cctcacagtg tgccaagtta ctcgagtcta tatctttgac 1800
tatggacaat attctgctga tttttcaggc ccaatgatga tcattactca gaagatcact 1860
agtttggctt gcgaaattca tgatgggatg tttcggaagg atgaagaact gacttcctca 1920
cagagggatt tagctgtaag gcgcatgcca agcttactgg agtatttgag ttacaactgt 1980
aacttcatgg ggatcctggc aggcccactt tgctcttaca aagactacat tactttcatt 2040
gaaggcagat cataccatat cacacaatct ggtgaaaatg gaaaagaaga gacacagtat 2100
gaaagaacag agccatctcc aaatactgcg gttgttcaga agctcttagt ttgtgggctg 2160
tccttgttat ttcacttgac catctgtaca acattacctg tggagtacaa cattgatgag 2220
cattttcaag ctacagcttc gtggccaaca aagattatct atctgtatat ctctcttttg 2280
gctgccagac ccaaatacta ttttgcatgg acgctagctg atgccattaa taatgctgca 2340
ggctttggtt tcagagggta tgacgaaaat ggagcagctc gctgggactt aatttccaat 2400
ttgagaattc aacaaataga gatgtcaaca agtttcaaga tgtttcttga taattggaat 2460
attcagacag ctctttggct caaaagggtg tgttatgaac gaacctcctt cagtccaact 2520
atccagacgt tcattctctc tgccatttgg cacggggtat acccaggata ttatctaacg 2580
tttctaacag gggtgttaat gacattagca gcaagagcta tgagaaataa ctttagacat 2640
tatttcattg aaccttccca actgaaatta ttttatgatg ttataacatg gatagtaact 2700
caagtagcaa taagttacac agttgtgcca tttgtgcttc tttctataaa accatcactc 2760
acgttttaca gctcctggta ttattgcctg cacattcttg gtatcttagt attattgttg 2820
ttgccagtga aaaaaactca aagaagaaag aatacacatg aaaacattca gctctcacaa 2880
tccagaaagt ttgatgaagg agaaaattct ttgggacaga acagtttttc tacaacaaac 2940
aatgtttgca atcagaatca agaaatagcc tcgagacatt catcactaaa gcagtgatcg 3000
ggaaggctct gagggctgtt tttttttttg atgttaacag aaaccaatct tagcaccttt 3060
tcaaggggtt tgagtttgtt ggaaaagcag ttaactgggg ggaaatggac agttatagat 3120
```

aaggaatttc ctgtacacca gattggaaat ggagtgaaac aagccctccc atgccatgtc 3180

cccgtgggcc acgccttatg taagaatatt tccatatttc agtgggcact cccaacctca 3240

gcacttgtcc gtagggtcac acgcgtgccc tgttgctgaa tgtatgttgc gtatcccaag 3300

gcactgaaga ggtggaaaaa taatcgtgtc aatctggatg atagagagaa attaactttt 3360

ccaaatgaat gtcttgcctt aaaccctcta tttcctaaaa tattgttcct aaatggtatt 3420

ttcaagtgta atattgtgag aacgctactg cagtagttga tgttgtgtgc tgtaaaggat 3480

tttaggagga atttgaaaca ggatatttaa gagtgtggat atttttaaaa tgcaataaac 3540

atctcagtat ttg   3553

<210> 17

<211> 432

<212> PRT

<213> Homo sapiens

<400> 17

Met Val Thr Leu Trp Gly Asn Tyr Glu Gly Ile Ser Gln Cys Phe Val
1   5   10   15

Phe Ala Leu Gly Tyr Leu Thr Val Cys Gln Val Thr Arg Val Tyr Ile
            20   25   30

Phe Asp Tyr Gly Gln Tyr Ser Ala Asp Phe Ser Gly Pro Met Met Ile
        35   40   45

Ile Thr Gln Lys Ile Thr Ser Leu Ala Cys Glu Ile His Asp Gly Met
        50   55   60

Phe Arg Lys Asp Glu Glu Leu Thr Ser Ser Gln Arg Asp Leu Ala Val
65   70   75   80

Arg Arg Met Pro Ser Leu Leu Glu Tyr Leu Ser Tyr Asn Cys Asn Phe
                85   90   95

Met Gly Ile Leu Ala Gly Pro Leu Cys Ser Tyr Lys Asp Tyr Ile Thr
            100   105   110

Phe Ile Glu Gly Arg Ser Tyr His Ile Thr Gln Ser Gly Glu Asn Gly
            115   120   125

Lys Glu Glu Thr Gln Tyr Glu Arg Thr Glu Pro Ser Pro Asn Thr Ala
        130   135   140

Val Val Gln Lys Leu Leu Val Cys Gly Leu Ser Leu Leu Phe His Leu
145   150   155   160

Thr Ile Cys Thr Thr Leu Pro Val Glu Tyr Asn Ile Asp Glu His Phe
            165   170   175

Gln Ala Thr Ala Ser Trp Pro Thr Lys Ile Ile Tyr Leu Tyr Ile Ser
            180   185   190

Leu Leu Ala Ala Arg Pro Lys Tyr Tyr Phe Ala Trp Thr Leu Ala Asp
            195   200   205

Ala Ile Asn Asn Ala Ala Gly Phe Gly Phe Arg Gly Tyr Asp Glu Asn
      210   215   220

Gly Ala Ala Arg Trp Asp Leu Ile Ser Asn Leu Arg Ile Gln Gln Ile
225   230   235   240

Glu Met Ser Thr Ser Phe Lys Met Phe Leu Asp Asn Trp Asn Ile Gln
            245   250   255

Thr Ala Leu Trp Leu Lys Arg Val Cys Tyr Glu Arg Thr Ser Phe Ser
            260   265   270

Pro Thr Ile Gln Thr Phe Ile Leu Ser Ala Ile Trp His Gly Val Tyr
            275   280   285

Pro Gly Tyr Tyr Leu Thr Phe Leu Thr Gly Val Leu Met Thr Leu Ala
        290   295   300

Ala Arg Ala Met Arg Asn Asn Phe Arg His Tyr Phe Ile Glu Pro Ser
305   310   315   320

Gln Leu Lys Leu Phe Tyr Asp Val Ile Thr Trp Ile Val Thr Gln Val
            325   330   335

Ala Ile Ser Tyr Thr Val Val Pro Phe Val Leu Leu Ser Ile Lys Pro
            340   345   350

Ser Leu Thr Phe Tyr Ser Ser Trp Tyr Tyr Cys Leu His Ile Leu Gly
            355   360   365

Ile Leu Val Leu Leu Leu Leu Pro Val Lys Lys Thr Gln Arg Arg Lys
            370   375   380

Asn Thr His Glu Asn Ile Gln Leu Ser Gln Ser Arg Lys Phe Asp Glu
385   390   395   400

Gly Glu Asn Ser Leu Gly Gln Asn Ser Phe Ser Thr Thr Asn Asn Val
            405   410   415

Cys Asn Gln Asn Gln Glu Ile Ala Ser Arg His Ser Ser Leu Lys Gln
            420   425   430

<210> 18
<211> 1031
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (102).. (734)

<400> 18

```
gggttgagcg ggaggcgcga tcggtccggt cggtggctcc ccgcggcggg gccgggcccg 60
atctcgggcg ggaaccgagc gcagagccgg tagcgggaag gatgaccacg ctcacacgac 120
aagacctcaa ctttggccaa gtggtggccg atgtgctctg cgagttcctg gaggtggctg 180
tgcatctcat cctctacgtg cgcgaggtct accccgtggg catcttccag aaacgcaaga 240
agtacaacgt gccggtccag atgtcctgcc acccggagct gaatcagtat atccaggaca 300
cgctgcactg cgtcaagcca ctcctggaga agaatgatgt ggagaaagtg gtggtggtga 360
ttttggataa agagcaccgc ccagtggaga aattcgtctt tgagatcacc cagcctccac 420
tgctgtccat cagctcagac tcgctgttgt ctcatgtgga gcagctgctc cgggccttca 480
tcctgaagat cagcgtgtgc gatgccgtcc tggaccacaa cccccaggc tgtaccttca 540
cagtcctggt gcacacgaga gaagccgcca ctcgcaacat ggagaagatc caggtcatca 600
aggatttccc ctggatcctg gcggatgagc aggatgtcca catgcatgac ccccggctga 660
taccactaaa aaccatgacg tcggacattt taaagatgca gctttacgtg gaagagcgcg 720
ctcataaagg cagctgaggg ggcacctgcc accccactga tgcccaaact gtcagacttt 780
gggggatccc cgcctagggc agtgctgcat ggctgccctg attccaagtg ctcttatcgc 840
ctctgtgtgt ggatcgcccg ccccagcccg gggccgctca ggtctgcttg gaggatgcct 900
cccccaggag ggcagtgagg gatgccgcaa cctcgacttc tcagcctcct ggggttccgc 960
cggccaacac tgtctgtctc aaatactgtg ctgtgagttg tttcaataaa ggggcccaa 1020
gggctgggct g                                                   1031
```

<210> 19
<211> 211
<212> PRT
<213> Homo sapiens

<400> 19

Met Thr Thr Leu Thr Arg Gln Asp Leu Asn Phe Gly Gln Val Val Ala
1   5   10   15

Asp Val Leu Cys Glu Phe Leu Glu Val Ala Val His Leu Ile Leu Tyr
            20   25   30

Val Arg Glu Val Tyr Pro Val Gly Ile Phe Gln Lys Arg Lys Lys Tyr
            35   40   45

Asn Val Pro Val Gln Met Ser Cys His Pro Glu Leu Asn Gln Tyr Ile
        50   55   60

Gln Asp Thr Leu His Cys Val Lys Pro Leu Leu Glu Lys Asn Asp Val
65   70   75   80

Glu Lys Val Val Val Val Ile Leu Asp Lys Glu His Arg Pro Val Glu
                85   90   95

Lys Phe Val Phe Glu Ile Thr Gln Pro Pro Leu Leu Ser Ile Ser Ser
            100   105   110

Asp Ser Leu Leu Ser His Val Glu Gln Leu Leu Arg Ala Phe Ile Leu
        115   120   125

Lys Ile Ser Val Cys Asp Ala Val Leu Asp His Asn Pro Pro Gly Cys
    130   135   140

Thr Phe Thr Val Leu Val His Thr Arg Glu Ala Ala Thr Arg Asn Met
145   150   155   160

Glu Lys Ile Gln Val Ile Lys Asp Phe Pro Trp Ile Leu Ala Asp Glu
            165   170   175

Gln Asp Val His Met His Asp Pro Arg Leu Ile Pro Leu Lys Thr Met
            180   185   190

Thr Ser Asp Ile Leu Lys Met Gln Leu Tyr Val Glu Glu Arg Ala His
        195   200   205

Lys Gly Ser
    210

<210> 20
<211> 2869
<212> DNA
<213> Homo sapiens

<220>

<221> CDS
<222> (569)..(2170)

<400> 20

```
cacgaagcag ggaaagggat ctggtaaaac ctaaatatga cctggataga acagatccat 60
tagaaaataa ttatactcca gtctcttcgg tacctagtat ttcatctggc cactaccctg 120
tacctacttt gagcagcact attacagtaa ttgctcctac tcatcatgga aacaacacta 180
ccgaaagttg gtctgaattt catgaagacc aagtggacca taactcttac gtaagaccac 240
ccatgccaaa gaaacggtgt agagactatg atgaaaaggg tttttgtatg agaggagaca 300
tgtgtccttt tgatcatgga agtgatccag tagttgtaga agatgtgaat cttcctggta 360
tgctgccttt cccagcacag cctcctgttg ttgaaggacc acctcctcct ggactccccc 420
cacctccacc aattcttaca cccccacctg tgaatctcag gcccccagta ccaccgccag 480
gtccattgcc acccagtctc ccacctgtta cagatgatat ttcttattct ttggttttga 540
caggaccacc acctccactt ccagacctat gtatagacac agagtgcatg cacaaaggcc 600
caacttgata ggactaacat caggggatat ggatttgcca cccagagaaa agcctcccaa 660
taaaagcagt atgaggatag tagtggactc agaatcaagg aaaagaacca ttggttctgg 720
agagcctgga gttcctacaa agaagacttg gtttgataaa ccaaatttta atagaacaaa 780
cagcccaggc tttcagaaga aggttcaatt tggaaatgaa ataccaagc ttgaacttag 840
aaaagttcct ccagaattaa ataatatcag caaacttaat gaacatttta gtcgatttgg 900
aaccttggtt aacttacagg ttgcttataa tggtgatcct gaaggtgccc taatccaatt 960
tgcaacatac gaagaagcaa agaaagcaat atcaagtacg gaagcagtat taaacaatcg 1020
ctttattaag gtttattggc acagagaagg aagcacccaa cagttacaaa ctacttctcc 1080
aaagccttta gtccagcagc ccattttgcc tgttgtgaag cagtcagtca aagagcggct 1140
gggtccagta ccttcaagta ctattgaacc tgcagaagcc cagagtgcct cttcagacct 1200
tcctcaggtg ttgtctacat ctactggcct aacaaaaaca gtgtataatc cagctgcttt 1260
gaaggctgca caggaaacct tacttgtttc cacctctgca gttgataata atgaagcaca 1320
gaaaaaaaaa caggaggcat tgaaacttca gcaggatgta aggaaaagga aacaagaaat 1380
tttagaaaag cacattgaaa cacagaagat gttaatttca aaactggaga aaacaaaac 1440
aatgaagtct gaagataaag cagaaataat gaaaacttta gaggttttga caaaaaatat 1500
taccaagttg aaagatgagg tcaaagctgc ttctcctgga cgctgtcttc caaaaagtat 1560
aaaaaccaag actcagatgc agaaggaatt acttgacaca gaactggatt tatataagaa 1620
gatgcaggct ggagaagaag tcactgaact taggagaaag tatacagaat tacagctgga 1680
agctgccaaa cgagggattc tttcatctgg tcggggcaga ggaattcatt caagaggtcg 1740
aggtgcagtt catggccgag gcagggggcg agggcgaggg cgaggtgtgc ctggtcatgc 1800
tgtggtggat caccgtccca gggcattgga gatttctgca tttacgggga gcgatagaga 1860
agatcttctt cctcattttg cgcaatatgg tgaaattgaa gattgtcaga ttgatgattc 1920
```

```
ctcacttcat gcagtaatta cattcaagac aagagcagaa gctgaagcag ctgcagttca 1980

tggagctcgt ttcaaagggc aagatctaaa actggcatgg aataaaccag taactaatat 2040

ttcagctgtt gaaacagaag aagttgagcc tgatgaagaa gaatttcagg aagagtcttt 2100

ggtggatgac tcattacttc aagatgatga tgaagaagaa gaggacaatg aatctcgttc 2160

ttggagaaga tgatttgact gatcattgat ctgcatatgc tagaactcta cctgtgtttc 2220

attagtatta tctaatgtac ttttacatat ttgtaaaaac aattttttggt aaaatgtgat 2280

gaagatggat ttcacaaata gacaaaaaag aagaaaacta ccttctgatc ttgtattttg 2340

aaagattgat gtttgcattt tacttcagta aacaattgct aaagacatca cactagaaac 2400

atatgcaatg tttttattac atacttctac tggacatcac agaattcttt gggttctttg 2460

taatttaatg aataggtctg aaaacttatg accaatactt gttataactt agaggacttt 2520

gttttattcc aaataaggaa tgaatttgca tttaaaatct taatgaatgt tttcaaaact 2580

gaatagataa catagtactc taactaaagt ctccaagtta tgtattataa tattacatag 2640

tagtatgctt aggctttact atgtattagc cttttgttgg actgtgtatg tatttaccca 2700

tatgggtttt aatgataatg gtgtatgact gctttacatg agtccttatg catccagatg 2760

ttataataaa gtggaatggt ctctttaaaa aaaaaaaagg aaagaaaaga gaaaagcaat 2820

gacaaaaaaa aaaaaaaaaa aaaaaagcca agacaatgtt ccttgattt              2869
```

<210> 21

<211> 534

<212> PRT

<213> Homo sapiens

<400> 21

```
Met Tyr Arg His Arg Val His Ala Gln Arg Pro Asn Leu Ile Gly Leu
1               5                   10                  15

Thr Ser Gly Asp Met Asp Leu Pro Pro Arg Glu Lys Pro Pro Asn Lys
            20                  25                  30

Ser Ser Met Arg Ile Val Val Asp Ser Glu Ser Arg Lys Arg Thr Ile
            35                  40                  45

Gly Ser Gly Glu Pro Gly Val Pro Thr Lys Lys Thr Trp Phe Asp Lys
        50                  55                  60

Pro Asn Phe Asn Arg Thr Asn Ser Pro Gly Phe Gln Lys Lys Val Gln
65                  70                  75                  80

Phe Gly Asn Glu Asn Thr Lys Leu Glu Leu Arg Lys Val Pro Pro Glu
                85                  90                  95
```

Leu Asn Asn Ile Ser Lys Leu Asn Glu His Phe Ser Arg Phe Gly Thr
                100   105   110

Leu Val Asn Leu Gln Val Ala Tyr Asn Gly Asp Pro Glu Gly Ala Leu
                115   120   125

Ile Gln Phe Ala Thr Tyr Glu Glu Ala Lys Lys Ala Ile Ser Ser Thr
            130   135   140

Glu Ala Val Leu Asn Asn Arg Phe Ile Lys Val Tyr Trp His Arg Glu
145   150   155   160

Gly Ser Thr Gln Gln Leu Gln Thr Thr Ser Pro Lys Pro Leu Val Gln
                165   170   175

Gln Pro Ile Leu Pro Val Val Lys Gln Ser Val Lys Glu Arg Leu Gly
                180   185   190

Pro Val Pro Ser Ser Thr Ile Glu Pro Ala Glu Ala Gln Ser Ala Ser
            195   200   205

Ser Asp Leu Pro Gln Val Leu Ser Thr Ser Thr Gly Leu Thr Lys Thr
        210   215   220

Val Tyr Asn Pro Ala Ala Leu Lys Ala Ala Gln Glu Thr Leu Leu Val
225   230   235   240

Ser Thr Ser Ala Val Asp Asn Asn Glu Ala Gln Lys Lys Lys Gln Glu
                245   250   255

Ala Leu Lys Leu Gln Gln Asp Val Arg Lys Arg Lys Gln Glu Ile Leu
                260   265   270

Glu Lys His Ile Glu Thr Gln Lys Met Leu Ile Ser Lys Leu Glu Lys
        275   280   285

Asn Lys Thr Met Lys Ser Glu Asp Lys Ala Glu Ile Met Lys Thr Leu
    290   295   300

Glu Val Leu Thr Lys Asn Ile Thr Lys Leu Lys Asp Glu Val Lys Ala
305   310   315   320

Ala Ser Pro Gly Arg Cys Leu Pro Lys Ser Ile Lys Thr Lys Thr Gln
                325   330   335

Met Gln Lys Glu Leu Leu Asp Thr Glu Leu Asp Leu Tyr Lys Lys Met
                340   345   350

Gln Ala Gly Glu Glu Val Thr Glu Leu Arg Arg Lys Tyr Thr Glu Leu
            355   360   365

Gln Leu Glu Ala Ala Lys Arg Gly Ile Leu Ser Ser Gly Arg Gly Arg
    370   375   380

```
Gly Ile His Ser Arg Gly Arg Gly Ala Val His Gly Arg Gly Arg Gly
385                 390             395             400
Arg Gly Arg Gly Arg Gly Val Pro Gly His Ala Val Val Asp His Arg
                405             410             415
Pro Arg Ala Leu Glu Ile Ser Ala Phe Thr Gly Ser Asp Arg Glu Asp
                420             425             430
Leu Leu Pro His Phe Ala Gln Tyr Gly Glu Ile Glu Asp Cys Gln Ile
            435             440             445
Asp Asp Ser Ser Leu His Ala Val Ile Thr Phe Lys Thr Arg Ala Glu
        450             455             460
Ala Glu Ala Ala Ala Val His Gly Ala Arg Phe Lys Gly Gln Asp Leu
465             470             475             480
Lys Leu Ala Trp Asn Lys Pro Val Thr Asn Ile Ser Ala Val Glu Thr
                485             490             495
Glu Glu Val Glu Pro Asp Glu Glu Glu Phe Gln Glu Glu Ser Leu Val
                500             505             510
Asp Asp Ser Leu Leu Gln Asp Asp Asp Glu Glu Glu Glu Asp Asn Glu
            515             520             525
Ser Arg Ser Trp Arg Arg
        530
```

<210> 22

<211> 1876

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (302)..(1243)

<400> 22

```
gaaggaagcc cccagccccct tccaggcccct gttctcagat atcccgcccca ggtacccgtt  60
ccaagccctg ccaccgcact acgggaggcc ctacccttttc ctgctgcagc ccacggccgc 120
cgccgacgcg gacggcttgg cccctgatgt gccgctcccg gctgatgggc ccgagcgcct 180
ggcactctca cccgaagaca agcccatccg cttgtcccccc tccaagatca cagagccgct 240
```

```
gcgggagggc ccggaggaag aaccgctggc tgagcgggag gtgaaggcag aggtggagga 300
catggacgag ggccccacag agctgccgcc tctggagtcg ccgctgccac tgcccgccgc 360
ggaagccatg gctaccccca gccctgcagg gggttgtgga ggtggcctgt tggaggccca 420
ggcgctgagt gccaccgggc agagctgcgc agagccctct gagtgtccag actttgtgga 480
ggggcctgaa ccacgggtgg attccccggg ccggacagaa ccctgcaccg ccgccctgga 540
cctgggggtg cagctgacac ccgagacact ggcggaggcc aaggaggagc cggtggaggt 600
gcctgtggcg gtgcccgtgg tggaggcagt gcccgaggaa ggcctggcgc aggtggcacc 660
gagcgagtcc cagcccaccc tagaaatgtc agactgtgac gtgcccgccg gggagggaca 720
gtgcccgagc ctggagcccc aagaggccgt gcctgtactc ggcagcacct gcttcctgga 780
agaggcaagc tctgaccagt tcctgcccag tctggaggac ccactggctg gcatgagcgc 840
cctggcggca gctgcggagc tgccccaggc caggcctctg ccctccccgg gtgctgctgg 900
agcccaggcc ttggagaagc tggaagcagc cgagagcctt gtcttggagc agagcttcct 960
gcatggcatc accctgctaa gtgagatcgc agagctggag ctggagagga ggagcccacc 1020
ccaaggcctc ccaccgtgca tgggacaggg cagcccgatg ccagctggcc tacctgactg 1080
tgccaggggc cctgccccca ccctctcagg atggcctaga cttggggaac agagccgggt 1140
ggggttgcag cccggagtgt ctgtcaaagg caccaggtgg agagggcccg gcacaggccc 1200
accctggtcc aaaccctcac actacagaaa accccaatgg tgctgaaact gtcgcccggc 1260
cacgcctggc ccctccccac ccaggaggga ggtggcactt cttaacctgt acagttttat 1320
tgtaccaaga gactcgcccc gcccctgtat cataagcctt taaatggagt caacttttta 1380
attatatata taaagataaa tatatataaa tatatatata aacttttaa aactgtgaaa 1440
aatagctatg aaattataaa aaaaaaacat tctgacgtgc agaatattat tttttatttc 1500
ctgttagatt atagtgtcta gcaccggctt caccggcctc ccagtcccca gcacaccccc 1560
cgcccacccc gccaagtgta ctgtactcac cccccaggat agagaagtgt ttgttaggga 1620
gagaagaggg agaggcagga gccggcccaa gcccagggtc cctgcttggg ccccagaaag 1680
cacttaacca ggccccaagc cttcaaggga aaccaaggcc tcaaccagac aatcttgagg 1740
gaaggaaaag ccagactttg ggtttgtttt ttggggaat tattggtttt tttttttat 1800
gtttcttttg gaattttgtt tgttggcaaa ttctgtgtga tcttttttca taaaaaaaaa 1860
gaaaagattt aattgg                                                1876
```

<210> 23

<211> 314

<212> PRT

<213> Homo sapiens

<400> 23

```
Met Asp Glu Gly Pro Thr Glu Leu Pro Pro Leu Glu Ser Pro Leu Pro
 1               5                  10                 15
Leu Pro Ala Ala Glu Ala Met Ala Thr Pro Ser Pro Ala Gly Gly Cys
             20                  25                 30
Gly Gly Gly Leu Leu Glu Ala Gln Ala Leu Ser Ala Thr Gly Gln Ser
             35                  40                 45
Cys Ala Glu Pro Ser Glu Cys Pro Asp Phe Val Glu Gly Pro Glu Pro
     50                  55                 60
Arg Val Asp Ser Pro Gly Arg Thr Glu Pro Cys Thr Ala Ala Leu Asp
 65                  70                 75                  80
Leu Gly Val Gln Leu Thr Pro Glu Thr Leu Ala Glu Ala Lys Glu Glu
                 85                  90                 95
Pro Val Glu Val Pro Val Ala Val Pro Val Val Glu Ala Val Pro Glu
                 100                 105                110
Glu Gly Leu Ala Gln Val Ala Pro Ser Glu Ser Gln Pro Thr Leu Glu
             115                 120                 125
Met Ser Asp Cys Asp Val Pro Ala Gly Glu Gly Gln Cys Pro Ser Leu
     130                 135                 140
Glu Pro Gln Glu Ala Val Pro Val Leu Gly Ser Thr Cys Phe Leu Glu
145                 150                 155                 160
Glu Ala Ser Ser Asp Gln Phe Leu Pro Ser Leu Glu Asp Pro Leu Ala
                 165                 170                 175
Gly Met Ser Ala Leu Ala Ala Ala Ala Glu Leu Pro Gln Ala Arg Pro
             180                 185                 190
Leu Pro Ser Pro Gly Ala Ala Gly Ala Gln Ala Leu Glu Lys Leu Glu
             195                 200                 205
Ala Ala Glu Ser Leu Val Leu Glu Gln Ser Phe Leu His Gly Ile Thr
     210                 215                 220
Leu Leu Ser Glu Ile Ala Glu Leu Glu Leu Glu Arg Arg Ser Pro Pro
225                 230                 235                 240
Gln Gly Leu Pro Pro Cys Met Gly Gln Gly Ser Pro Met Pro Ala Gly
             245                 250                 255
Leu Pro Asp Cys Ala Arg Gly Pro Ala Pro Thr Leu Ser Gly Trp Pro
             260                 265                 270
Arg Leu Gly Glu Gln Ser Arg Val Gly Leu Gln Pro Gly Val Ser Val
             275                 280                 285
```

Lys Gly Thr Arg Trp Arg Gly Pro Gly Thr Gly Pro Pro Trp Ser Lys
    290   295   300
Pro Ser His Tyr Arg Lys Pro Gln Trp Cys
305   310

<210> 24
<211> 1907
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (446)..(1087)

<400> 24
ataagggaaa aaaactccat taaaaagccc agctttcctc catgttagat gtgacttgga 60
aaatgagaaa gatttagcaa aattccaccg tgtcttttgc caggctagag acagggagag 120
cagagtaaaa ccctcaggct gctgaaattt ctaggctgtt aggaagcccc tcgaattctg 180
tgaaaatgag ggtttcttaa ctcacactga gagcggaaag gggcagaccc ttttcataac 240
tccctcaagt gtgtgttacc tttctttacc agcatggtaa gcaacaggac atatcccagc 300
ctcggacatg tctgtatgat ccaaggtacc caaagtcaga cagagtaaac tcaagcctgg 360
cactggcttt ctgccgcttc atgtgctttg gaaaaagcag gagaagcaat agcagcagga 420
gtccccagca gctggagccg caagaatgaa ctgcaaagag ggaactgaca gcagctgcgg 480
ctgcaggggc aacgacgaga agaagatgtt gaagtgtgtg gtggtggggg acggtgccgt 540
ggggaaaacc tgcctgctga tgagctacgc caacgacgcc ttcccagagg aatacgtgcc 600
cactgtgttt gaccactatg cagttactgt gactgtggga ggcaagcaac acttgctcgg 660
actgtatgac accgcgggac aggaggacta caaccagctg aggccactct cctaccccaa 720
cacggatgtg ttttttgatct gcttctctgt cgtaaaccct gcctcttacc acaatgtcca 780
ggaggaatgg gtccccgagc tcaaggactg catgcctcac gtgccttatg tcctcatagg 840
gacccagatt gatctccgtg atgacccaaa aaccttggcc cgtttgctgt atatgaaaga 900
gaaacctctc acttacgagc atggtgtgaa gctcgcaaaa gcgatcggag cacagtgcta 960
cttggaatgt tcagctctga ctcagaaagg tctcaaagcg gttttttgatg aagcaatcct 1020
caccattttc cacccccaaga aaagaagaa acgctgttct gagggtcaca gctgctgttc 1080
aattatctga ggttgtctgg gacctgcctc cacccccatcc aggatgaga atggcagcca 1140
atctctgtgg ccaagctcca gccaaaaagg agggcacgac cagaaaggaa ctcccttttgc 1200

```
acggaggctt gccccatcac cctctgagcc ctcccaacac agcacactag tcagcccact 1260
gccacgacct ccctgccagc cagaagcatc cgtactgcac gctgtctgag aatgctgggc 1320
ctggattgca gacagtgccg ctgctgatcg catcaaaaac aaagtcaaag gccatctcac 1380
attttacaaa tccccagctc atgaacgtga agctgatagg aaatcacccc agggaacccg 1440
aaaaagaaac ttgattcctc tattgctggc cttacttgat gtcttttata aaacttggga 1500
ctacaatact aacctttttt tctgaatctg ctgttctacc catgtgtctc acattcattt 1560
gtattatttc aagaaatgta ctaatttcca gttcactcag gccttactaa tccataccaa 1620
attagcctaa agacaaggca ttttatattc atttctattt tcagcatgtt tctaccaaag 1680
ctattagaac caacacgtac ctctgaatgc ccgattataa gaagacatga gaagacttta 1740
aaagttttgg aaatttacag agccatgatt tttgaaccta attgaaagaa aaccatctga 1800
attgttgcag gtccacattt ttgccaaaga tacactctat agatgcttag tagtggcctg 1860
atttttttcc atgtattgcc acgacaaact aaaaatgaac tgtgttt          1907
```

<210> 25
<211> 214
<212> PRT
<213> Homo sapiens

<400> 25

```
Met Asn Cys Lys Glu Gly Thr Asp Ser Ser Cys Gly Cys Arg Gly Asn
 1               5                  10                  15
Asp Glu Lys Lys Met Leu Lys Cys Val Val Val Gly Asp Gly Ala Val
                20                  25                  30
Gly Lys Thr Cys Leu Leu Met Ser Tyr Ala Asn Asp Ala Phe Pro Glu
            35                  40                  45
Glu Tyr Val Pro Thr Val Phe Asp His Tyr Ala Val Thr Val Thr Val
        50                  55                  60
Gly Gly Lys Gln His Leu Leu Gly Leu Tyr Asp Thr Ala Gly Gln Glu
65                  70                  75                  80
Asp Tyr Asn Gln Leu Arg Pro Leu Ser Tyr Pro Asn Thr Asp Val Phe
                85                  90                  95
Leu Ile Cys Phe Ser Val Val Asn Pro Ala Ser Tyr His Asn Val Gln
                100                 105                 110
Glu Glu Trp Val Pro Glu Leu Lys Asp Cys Met Pro His Val Pro Tyr
            115                 120                 125
```

```
Val Leu Ile Gly Thr Gln Ile Asp Leu Arg Asp Asp Pro Lys Thr Leu
        130             135             140
Ala Arg Leu Leu Tyr Met Lys Glu Lys Pro Leu Thr Tyr Glu His Gly
145             150             155             160
Val Lys Leu Ala Lys Ala Ile Gly Ala Gln Cys Tyr Leu Glu Cys Ser
            165             170             175
Ala Leu Thr Gln Lys Gly Leu Lys Ala Val Phe Asp Glu Ala Ile Leu
            180             185             190
Thr Ile Phe His Pro Lys Lys Lys Lys Lys Arg Cys Ser Glu Gly His
            195             200             205
Ser Cys Cys Ser Ile Ile
        210
```

<210> 26
<211> 4869
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (150)..(4082)

<400> 26

```
aatgatttcc tcagtgatta cgtacagagc gagtccctgc gggttagggg ccccctctgg 60
agccatcctg atggctttgg gggccttgct tccattttcc attattatgt ggactaccgg 120
agcgacagcg cagtccaaga ccttgcagga tgtctcgccg caagcaagcg aaaccgagat 180
ccctcaaaga ccccaactgt aaacttgaag acaagactga agatggagag gcactagatt 240
gtaagaagag gccggaagac ggggaggagt tggaagacga agctgtgcac agctgtgaca 300
gctgcctcca ggtgtttgaa tcgctgagcg atatcacaga acacaagatt aatcaatgtc 360
aactgacaga tggagtggat gttgaagatg atccgacttg ctcttggcca gcttcctcac 420
cttctagcaa ggatcagact tcccctagcc atggagaagg ttgcgatttt ggagaggaag 480
aaggtggccc tgggcttcca tacccgtgtc aattctgtga caagtcgttt agccgcctca 540
gctacctaaa gcaccatgag cagagtcaca gtgacaaact gcctttcaaa tgcacctact 600
gcagtaggct gttcaaacac aagcgcagcc gagatcgcca cataaaactc cacaccgggg 660
acaagaagta ccactgcagt gaatgtgatg ctgcgttttc cagaagtgat cacttgaaga 720
```

```
tccacttaaa gactcacacg tccaacaagc catataaatg tgccatttgt cgccgtgggt 780
ttctgtcctc tagttcctta cacggacaca tgcaggttca tgagaggaac aaggacggct 840
ctcagtccgg ttccaggatg gaggactgga agatgaagga cactcagaag tgcagtcagt 900
gtgaggaagg ctttgacttc ccggaagacc tccaaaaaca cattgcagag tgccacccccg 960
aatgctcccc aaatgaggac cgagcggccc tccagtgtgt ctactgccac gagctcttcg 1020
tagaggagac ctccctcatg aaccacatgg agcaggtgca tagcggggag aagaagaact 1080
catgcagcat ttgttctgag agtttccaca cagttgagga actgtacagc cacatggaca 1140
gtcaccagca accggagtca tgcaatcaca gcaacagccc ttccctggtc acggtgggct 1200
atacctccgt gtccagtacg actccagatt ccaacctctc agtggacagc tcaaccatgg 1260
tggaagctgc cccgccaatc ccaaagagtc gagggaggaa gagggccgct caacaaaccc 1320
ctgacatgac tggtccctcg agtaaacaag caaaagttac ctacagctgt atttactgca 1380
acaaacaatt attttcaagt cttgcagttc tgcagattca cctgaaaact atgcacttag 1440
ataagccaga acaggcccat atttgtcagt attgcttgga ggtcctgccc tcactctata 1500
acctaaatga acatcttaag caagtgcatg aagctcagga cccaggtctg attgtttctg 1560
ccatgcctgc cattgtctac cagtgtaact tctgttccga agttgtcaac gacctcaaca 1620
ctcttcagga acacatccga tgttctcatg gatttgcaaa ccctgcagct aaagatagta 1680
atgcattctt ttgtccccat tgctatatgg ggtttctcac tgactcttcc ctggaagagc 1740
atattagaca ggttcattgt gacctcagtg gctcccgatt tgggtctcca gtgcttggga 1800
ctcccaaaga accagtagta gaagtctatt cttgttccta ttgtacaaat tcgccaatat 1860
tcaacagcgt tcttaaactg aacaagcata tcaaagagaa tcataaaaac attcccttgg 1920
ccctgaatta tatccacaat gggaagaaat ccagggcctt aagcccccta tctcctgtgg 1980
ccatagagca gacatctctt aagatgatgc aggcagtagg aggtgcacct gcacgcccca 2040
ctggagaata tatctgtaat caatgtggtg ctaagtacac atccctagac agctttcaga 2100
ctcacctaaa aactcatctc gacactgtgc ttccaaaatt gacctgtcct cagtgcaaca 2160
aggaattccc caaccaagaa tccttgctga agcatgttac cattcacttt atgatcactt 2220
caacgtatta catctgtgag agttgtgaca agcaattcac atcagtggat gaccttcaga 2280
aacacctgct ggacatgcac acctttgtct tctttcgctg caccctctgc caggaagttt 2340
ttgactcaaa agtctccatt cagctccact tggctgtgaa gcacagtaac gaaaagaaag 2400
tctataggtg cacatcttgc aactgggact tccgcaacga aactgacttg cagctccatg 2460
tgaaacacaa ccacctggaa aaccaaggga aagtgcataa gtgcattttc tgcggtgagt 2520
cctttggcac cgaggtggag ctgcaatgcc acatcaccac tcacagtaag aagtacaact 2580
gcaagttctg tagcaaagcc ttccatgcga tcattttgtt agaaaaacac ttgcgagaaa 2640
aacactgtgt attcgaaacc aagacaccca actgtggaac aaatggagct tccgagcaag 2700
tgcagaaaga ggaagtggag ctgcagactt tgctgaccaa cagccaggag tcccacaaca 2760
gtcacgatgg gagcgaagaa gacgttgaca cctctgagcc tatgtacggc tgcgacattt 2820
gtgggggcagc ctacactatg gaaactttgc tgcagaatca ccagctccga gaccacaaca 2880
```

```
tcagacctgg agaaagtgcc atcgtgaaaa agaaagctga gctcattaaa gggaattaca 2940

agtgcaacgt gtgctctcga accttcttct ccgaaaatgg cctccgggaa catatgcaga 3000

cccacctagg ccctgtcaaa cactacatgt gccctatttg cggagagcgg tttccctccc 3060

ttttaactct tactgaacac aaagtcacgc atagtaagag tcttgatact ggaaactgcc 3120

ggatttgcaa gatgcctctc cagagtgaag aggagttttt agagcattgc caaatgcacc 3180

ctgacttgag gaattccctg acaggctttc gctgcgtggt gtgcatgcag acagtgacct 3240

ccaccttgga actcaaaatc catgggacgt tccacatgca aaagacaggg aatgggtctg 3300

cagttcagac cacagggcgg ggccagcacg tccaaaaact gtataagtgc gcatcttgcc 3360

tcaaagaatt ccgttccaag caagatctgg tgaaacttga tatcaatggc ctgccatatg 3420

gtctgtgtgc cggctgcgtg aatctcagta agagcgccag cccaggcatt aacgtccctc 3480

ccggcacgaa tagaccaggc ttgggccaga atgagaatct gagtgccatt gaggggaaag 3540

gcaaggtggg gggactgaag acacgctgct ctagctgcaa cgttaagttt gagtctgaaa 3600

gtgaactcca gaaccacatc caaaccatcc accgagagct cgtgccagac agcaacagca 3660

cacagttgaa aacgccccaa gtatcaccaa tgcccagaat cagtccctcc cagtcggatg 3720

agaagaagac ctatcaatgc atcaagtgtc agatggtttt ctacaatgaa tgggatattc 3780

aggttcatgt tgcaaatcac atgattgatg aaggactgaa ccatgaatgc aaactctgca 3840

gccagacctt tgactctcct gccaaactcc agtgccacct gatagagcac agcttcgaag 3900

ggatgggagg caccttcaag tgtccagtct gctttacagt atttgttcaa gcaaacaagt 3960

tgcagcagca tattttctct gcccatggac aagaagacaa gatctatgac tgtacacaat 4020

gtccacagaa gtttttcttc caaacagagc tgcagaatca tacaatgacc caacacagca 4080

gttagtgcaa gtacagtctc tcaaggagaa ttgattttgt ggcacaaaaa gggaacatgt 4140

tttactcttt gcacgaaact ttcattgtta atgtatatta ttcagaaaca ttgtattgta 4200

ccataaaact tgtattatca aactgttgga tgttcatgtg tttgaacttt tgcgcaccgg 4260

atagacccct tgtatataaa gtgttgcaca tgtattatgt cgtctgatac taaaatggtc 4320

ttataaagac aagtggactt gggccctatt caggcaagat taaaaaaaaa aaagactatg 4380

accaaaatgg cttaagataa agtattttta aggaagaaag attaaaaaca actgttatac 4440

atgagactat ggttggactt ccttttcttt acacttaagc ctagaatttc tctttaggta 4500

tatcagcgct taaatccaag actatttttt attgctgaag attcttgcaa accatgaaga 4560

gatgttctca cagaacagaa ccccacagct ggataaggcc cgtatatata tatttgtaag 4620

ccttgcaatg tgacaggtag catcactata tatgcaatag ttgttatgta gactgtcaaa 4680

gaattttttt ttccctggat acatttgaag ctttgagtgt tcaaggtttt ccttaatgat 4740

ttcacgcagc caaattcttg aatcagttga actaacctgt atgttactgt tattaatgtt 4800

tactctgcag tctgaacctg gagattactg gaattgtttt ccaagaggaa ataaattcag 4860

tttaccatt                                                          4869
```

<210> 27

<211> 1311

<212> PRT

<213> Homo sapiens

<400> 27

Met	Ser	Arg	Arg	Lys	Gln	Ala	Lys	Pro	Arg	Ser	Leu	Lys	Asp	Pro	Asn
1				5					10					15	

Cys	Lys	Leu	Glu	Asp	Lys	Thr	Glu	Asp	Gly	Glu	Ala	Leu	Asp	Cys	Lys
			20				25				30				

Lys	Arg	Pro	Glu	Asp	Gly	Glu	Glu	Leu	Glu	Asp	Glu	Ala	Val	His	Ser
		35				40				45					

Cys	Asp	Ser	Cys	Leu	Gln	Val	Phe	Glu	Ser	Leu	Ser	Asp	Ile	Thr	Glu
	50				55				60						

His	Lys	Ile	Asn	Gln	Cys	Gln	Leu	Thr	Asp	Gly	Val	Asp	Val	Glu	Asp
65				70				75				80			

Asp	Pro	Thr	Cys	Ser	Trp	Pro	Ala	Ser	Ser	Pro	Ser	Ser	Lys	Asp	Gln
			85				90				95				

Thr	Ser	Pro	Ser	His	Gly	Glu	Gly	Cys	Asp	Phe	Gly	Glu	Glu	Glu	Gly
		100				105				110					

Gly	Pro	Gly	Leu	Pro	Tyr	Pro	Cys	Gln	Phe	Cys	Asp	Lys	Ser	Phe	Ser
	115				120				125						

Arg	Leu	Ser	Tyr	Leu	Lys	His	His	Glu	Gln	Ser	His	Ser	Asp	Lys	Leu
	130				135				140						

Pro	Phe	Lys	Cys	Thr	Tyr	Cys	Ser	Arg	Leu	Phe	Lys	His	Lys	Arg	Ser
145				150				155				160			

Arg	Asp	Arg	His	Ile	Lys	Leu	His	Thr	Gly	Asp	Lys	Lys	Tyr	His	Cys
			165				170				175				

Ser	Glu	Cys	Asp	Ala	Ala	Phe	Ser	Arg	Ser	Asp	His	Leu	Lys	Ile	His
			180				185				190				

Leu	Lys	Thr	His	Thr	Ser	Asn	Lys	Pro	Tyr	Lys	Cys	Ala	Ile	Cys	Arg
		195				200				205					

Arg	Gly	Phe	Leu	Ser	Ser	Ser	Ser	Leu	His	Gly	His	Met	Gln	Val	His
	210				215				220						

Glu	Arg	Asn	Lys	Asp	Gly	Ser	Gln	Ser	Gly	Ser	Arg	Met	Glu	Asp	Trp
225				230				235				240			

```
Lys Met Lys Asp Thr Gln Lys Cys Ser Gln Cys Glu Glu Gly Phe Asp
              245             250             255

Phe Pro Glu Asp Leu Gln Lys His Ile Ala Glu Cys His Pro Glu Cys
              260             265             270

Ser Pro Asn Glu Asp Arg Ala Ala Leu Gln Cys Val Tyr Cys His Glu
              275             280             285

Leu Phe Val Glu Glu Thr Ser Leu Met Asn His Met Glu Gln Val His
        290             295             300

Ser Gly Glu Lys Lys Asn Ser Cys Ser Ile Cys Ser Glu Ser Phe His
305             310             315             320

Thr Val Glu Glu Leu Tyr Ser His Met Asp Ser His Gln Gln Pro Glu
              325             330             335

Ser Cys Asn His Ser Asn Ser Pro Ser Leu Val Thr Val Gly Tyr Thr
              340             345             350

Ser Val Ser Ser Thr Thr Pro Asp Ser Asn Leu Ser Val Asp Ser Ser
              355             360             365

Thr Met Val Glu Ala Ala Pro Pro Ile Pro Lys Ser Arg Gly Arg Lys
        370             375             380

Arg Ala Ala Gln Gln Thr Pro Asp Met Thr Gly Pro Ser Ser Lys Gln
385             390             395             400

Ala Lys Val Thr Tyr Ser Cys Ile Tyr Cys Asn Lys Gln Leu Phe Ser
              405             410             415

Ser Leu Ala Val Leu Gln Ile His Leu Lys Thr Met His Leu Asp Lys
              420             425             430

Pro Glu Gln Ala His Ile Cys Gln Tyr Cys Leu Glu Val Leu Pro Ser
              435             440             445

Leu Tyr Asn Leu Asn Glu His Leu Lys Gln Val His Glu Ala Gln Asp
        450             455             460

Pro Gly Leu Ile Val Ser Ala Met Pro Ala Ile Val Tyr Gln Cys Asn
465             470             475             480

Phe Cys Ser Glu Val Val Asn Asp Leu Asn Thr Leu Gln Glu His Ile
              485             490             495

Arg Cys Ser His Gly Phe Ala Asn Pro Ala Ala Lys Asp Ser Asn Ala
              500             505             510

Phe Phe Cys Pro His Cys Tyr Met Gly Phe Leu Thr Asp Ser Ser Leu
        515             520             525
```

Glu Glu His Ile Arg Gln Val His Cys Asp Leu Ser Gly Ser Arg Phe
    530   535   540

Gly Ser Pro Val Leu Gly Thr Pro Lys Glu Pro Val Val Glu Val Tyr
545   550   555   560

Ser Cys Ser Tyr Cys Thr Asn Ser Pro Ile Phe Asn Ser Val Leu Lys
         565   570   575

Leu Asn Lys His Ile Lys Glu Asn His Lys Asn Ile Pro Leu Ala Leu
    580   585   590

Asn Tyr Ile His Asn Gly Lys Lys Ser Arg Ala Leu Ser Pro Leu Ser
    595   600   605

Pro Val Ala Ile Glu Gln Thr Ser Leu Lys Met Met Gln Ala Val Gly
    610   615   620

Gly Ala Pro Ala Arg Pro Thr Gly Glu Tyr Ile Cys Asn Gln Cys Gly
625   630   635   640

Ala Lys Tyr Thr Ser Leu Asp Ser Phe Gln Thr His Leu Lys Thr His
         645   650   655

Leu Asp Thr Val Leu Pro Lys Leu Thr Cys Pro Gln Cys Asn Lys Glu
    660   665   670

Phe Pro Asn Gln Glu Ser Leu Leu Lys His Val Thr Ile His Phe Met
    675   680   685

Ile Thr Ser Thr Tyr Tyr Ile Cys Glu Ser Cys Asp Lys Gln Phe Thr
    690   695   700

Ser Val Asp Asp Leu Gln Lys His Leu Leu Asp Met His Thr Phe Val
705   710   715   720

Phe Phe Arg Cys Thr Leu Cys Gln Glu Val Phe Asp Ser Lys Val Ser
         725   730   735

Ile Gln Leu His Leu Ala Val Lys His Ser Asn Glu Lys Lys Val Tyr
    740   745   750

Arg Cys Thr Ser Cys Asn Trp Asp Phe Arg Asn Glu Thr Asp Leu Gln
    755   760   765

Leu His Val Lys His Asn His Leu Glu Asn Gln Gly Lys Val His Lys
    770   775   780

Cys Ile Phe Cys Gly Glu Ser Phe Gly Thr Glu Val Glu Leu Gln Cys
785   790   795   800

His Ile Thr Thr His Ser Lys Lys Tyr Asn Cys Lys Phe Cys Ser Lys
    805   810   815

Ala Phe His Ala Ile Ile Leu Leu Glu Lys His Leu Arg Glu Lys His
   820   825   830

Cys Val Phe Glu Thr Lys Thr Pro Asn Cys Gly Thr Asn Gly Ala Ser
   835   840   845

Glu Gln Val Gln Lys Glu Glu Val Glu Leu Gln Thr Leu Leu Thr Asn
  850   855   860

Ser Gln Glu Ser His Asn Ser His Asp Gly Ser Glu Glu Asp Val Asp
865   870   875   880

Thr Ser Glu Pro Met Tyr Gly Cys Asp Ile Cys Gly Ala Ala Tyr Thr
    885   890   895

Met Glu Thr Leu Leu Gln Asn His Gln Leu Arg Asp His Asn Ile Arg
   900   905   910

Pro Gly Glu Ser Ala Ile Val Lys Lys Lys Ala Glu Leu Ile Lys Gly
   915   920   925

Asn Tyr Lys Cys Asn Val Cys Ser Arg Thr Phe Phe Ser Glu Asn Gly
  930   935   940

Leu Arg Glu His Met Gln Thr His Leu Gly Pro Val Lys His Tyr Met
945   950   955   960

Cys Pro Ile Cys Gly Glu Arg Phe Pro Ser Leu Leu Thr Leu Thr Glu
    965   970   975

His Lys Val Thr His Ser Lys Ser Leu Asp Thr Gly Asn Cys Arg Ile
   980   985   990

Cys Lys Met Pro Leu Gln Ser Glu Glu Glu Phe Leu Glu His Cys Gln
   995   1000   1005

Met His Pro Asp Leu Arg Asn Ser Leu Thr Gly Phe Arg Cys Val Val
  1010   1015   1020

Cys Met Gln Thr Val Thr Ser Thr Leu Glu Leu Lys Ile His Gly Thr
1025   1030   1035   1040

Phe His Met Gln Lys Thr Gly Asn Gly Ser Ala Val Gln Thr Thr Gly
    1045   1050   1055

Arg Gly Gln His Val Gln Lys Leu Tyr Lys Cys Ala Ser Cys Leu Lys
    1060   1065   1070

Glu Phe Arg Ser Lys Gln Asp Leu Val Lys Leu Asp Ile Asn Gly Leu
   1075   1080   1085

Pro Tyr Gly Leu Cys Ala Gly Cys Val Asn Leu Ser Lys Ser Ala Ser
  1090   1095   1100

Pro Gly Ile Asn Val Pro Pro Gly Thr Asn Arg Pro Gly Leu Gly Gln
1105   1110   1115   1120
Asn Glu Asn Leu Ser Ala Ile Glu Gly Lys Gly Lys Val Gly Gly Leu
                 1125   1130   1135
Lys Thr Arg Cys Ser Ser Cys Asn Val Lys Phe Glu Ser Glu Ser Glu
            1140   1145   1150
Leu Gln Asn His Ile Gln Thr Ile His Arg Glu Leu Val Pro Asp Ser
          1155   1160   1165
Asn Ser Thr Gln Leu Lys Thr Pro Gln Val Ser Pro Met Pro Arg Ile
        1170   1175   1180
Ser Pro Ser Gln Ser Asp Glu Lys Lys Thr Tyr Gln Cys Ile Lys Cys
1185   1190   1195   1200
Gln Met Val Phe Tyr Asn Glu Trp Asp Ile Gln Val His Val Ala Asn
                 1205   1210   1215
His Met Ile Asp Glu Gly Leu Asn His Glu Cys Lys Leu Cys Ser Gln
                 1220   1225   1230
Thr Phe Asp Ser Pro Ala Lys Leu Gln Cys His Leu Ile Glu His Ser
          1235   1240   1245
Phe Glu Gly Met Gly Gly Thr Phe Lys Cys Pro Val Cys Phe Thr Val
        1250   1255   1260
Phe Val Gln Ala Asn Lys Leu Gln Gln His Ile Phe Ser Ala His Gly
1265   1270   1275   1280
Gln Glu Asp Lys Ile Tyr Asp Cys Thr Gln Cys Pro Gln Lys Phe Phe
                 1285   1290   1295
Phe Gln Thr Glu Leu Gln Asn His Thr Met Thr Gln His Ser Ser
          1300   1305   1310

<210> 28
<211> 1988
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (160)..(876)

<400> 28

```
gtttccgctg gcggcggcgg cggcggcggt gccggagcgc gagcagagcg gagaccccca 60

ggtcttgcgg gcgcggaata tcctggaacc ttcttttgtt tgtcagcagc caaggtgttt 120

ccaggaagtt cagagagaac agaatttaag aagtgcaaca tggccagggg ctgcctctgc 180

tgcttgaagt acatgatgtt cctcttcaat ttgatattct ggctctgtgg ctgtgggctg 240

ctgggagtgg gcatctggct ctccgtgtcc caaggcaact ttgccacctt ctcccccagc 300

ttcccttcgt tgtctgcagc caacctggtc attgccatag gcaccattgt catggtgacg 360

ggcttcctcg gctgcctggg ggccatcaag gaaaacaagt gcctcctcct cagctttttc 420

atcgtcctgt tggtcatcct cctagcagag ctgatcttac tcatcctctt ctttgtctac 480

atggacaagg tgaacgagaa cgccaagaag gacctgaagg aaggcctgct gctgtaccac 540

accgagaaca acgtggggct gaagaacgcc tggaacatca tccaggctga gatgcgatgc 600

tgtggtgtca ctgactacac agactggtac ccagtgctgg gggagaacac ggttcccgac 660

cgctgctgca tggagaactc ccagggctgc gggcgcaacg ccaccacgcc tttgtggaga 720

acgggctgct atgaaaaggt gaagatgtgg ttcgatgaca ataagcacgt gctgggcacg 780

gtggggatgt gcatcctcat catgcagatc ctgggcatgg ccttctccat gaccctcttc 840

cagcacatcc accggactgg taagaagtac gacgcatgag cgggctggcc gggagtgccc 900

accccgccct gctgccctgt ggagggaaga ggattgagct ttgtgtcacc tgcctgcgct 960

ctccagatat gacccctgca cccacccccc acagcctgcc ctacccccacc taccctgcct 1020

cagcctcaga cttctcagtg ggtggagtgc cagggaggag gaggcacacg gagacctggg 1080

gctcggggcc cctggattcc tgcatctgca tgtgcgtatt tgccaaagac gacagggtgg 1140

gctggggtgc gctccggagg aacccccggc actgttgggc ttctgcccct gcccttcctc 1200

acactgacac tttgtcccca catggggtgg ggagcagagt gcccgccccg tggagatacc 1260

gccccagcgg gggctgcgac atctatggcc accatggggc acctggcggg gcggggtct 1320

gccggcctct gggcaaggcc cctggagcat ctcgcccagg ctttttatac cttacaatgt 1380

aactttttta ttttatttta ctctatgatt attcaggaat attatctctc agataagttt 1440

agggttagat ttctgatttg taacttttta ctgtgttgat ttctttaatg gtttgacttt 1500

ttttccctga gggtgaggga tgggtgggaa gagaggacat ctgtcccctc tctccagcc 1560

cctgcccacc cactggtgga ggtgctaact agcagggacg tggcatagga tgggagctgg 1620

gcgtgaggtg cttggggtcc attctttgtc cctcagcttc tcagtccg gccagcccctt 1680

gtgttcccgt gccccacact ttcctcctcc ccactgcagt gagtcaatag tccagggtgg 1740

ggcctggcct ccctgccctg attggggact caggaggtga ggcctggggg gcttcctgcc 1800

ccctccttgc ccacctgcct gcccccgggc agcacgggag ggagagcagg gtgagcacgc 1860

ttgttggttt cagatgcact ttctgcttgc attgccgtat ctgtgcgttc cttcatcctg 1920

gtcctggctt tatggaacac catgttttta gcatgttttt aaataaaaac ggataaagtg 1980

tcaaaagc                                                              1988
```

<210> 29

<211> 239

<212> PRT

<213> Homo sapiens

<400> 29

```
Met Ala Arg Gly Cys Leu Cys Cys Leu Lys Tyr Met Met Phe Leu Phe
 1               5                   10                  15
Asn Leu Ile Phe Trp Leu Cys Gly Cys Gly Leu Leu Gly Val Gly Ile
                20                  25                  30
Trp Leu Ser Val Ser Gln Gly Asn Phe Ala Thr Phe Ser Pro Ser Phe
            35                  40                  45
Pro Ser Leu Ser Ala Ala Asn Leu Val Ile Ala Ile Gly Thr Ile Val
        50                  55                  60
Met Val Thr Gly Phe Leu Gly Cys Leu Gly Ala Ile Lys Glu Asn Lys
65                  70                  75                  80
Cys Leu Leu Leu Ser Phe Phe Ile Val Leu Leu Val Ile Leu Leu Ala
                85                  90                  95
Glu Leu Ile Leu Leu Ile Leu Phe Phe Val Tyr Met Asp Lys Val Asn
            100                 105                 110
Glu Asn Ala Lys Lys Asp Leu Lys Glu Gly Leu Leu Leu Tyr His Thr
            115                 120                 125
Glu Asn Asn Val Gly Leu Lys Asn Ala Trp Asn Ile Ile Gln Ala Glu
        130                 135                 140
Met Arg Cys Cys Gly Val Thr Asp Tyr Thr Asp Trp Tyr Pro Val Leu
145                 150                 155                 160
Gly Glu Asn Thr Val Pro Asp Arg Cys Cys Met Glu Asn Ser Gln Gly
                165                 170                 175
Cys Gly Arg Asn Ala Thr Thr Pro Leu Trp Arg Thr Gly Cys Tyr Glu
            180                 185                 190
Lys Val Lys Met Trp Phe Asp Asp Asn Lys His Val Leu Gly Thr Val
            195                 200                 205
Gly Met Cys Ile Leu Ile Met Gln Ile Leu Gly Met Ala Phe Ser Met
        210                 215                 220
```

Thr Leu Phe Gln His Ile His Arg Thr Gly Lys Lys Tyr Asp Ala
225   230   235

<210> 30

<211> 1900

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (128)..(1195)

<400> 30

tatattccgt gggagtgaca ttaaagacct tactgtttgt gagccaccaa aaccacagtg 60

ttctttgcct caagacccag ctattgttca gtcctcacta ggctcatcga cttcttcatt 120

ccagtccatg ggttcttatg gacctttcgg caggatgccc acatacagtc agttcagtcc 180

gagttcctta gttgggcagc agtttggtgc tgttggtgtt gctggaagct ctttgacatc 240

ctttggaaca gaaacatcaa acagtggtac cttaccccaa agtagtgcgg ttggttctgc 300

ctttacacag gatacaagat ctctaaaaac acagttatct caaggtcgct caagccctca 360

gttagaccct ttgagaaaaa gcccaaccat ggaacaagca gtgcagaccg cctcagccca 420

cttacctgct ccagcagctg ttgggagaag gagtcctgta tcaaccaggc ctttgccatc 480

tgccagccaa aaggcaggag agaatcagga gcacaggcga gctgaagtac acaaagtttc 540

aaggccagaa aatgagcaac tcagaaatga taacaagaga caagtagctc caggtgctcc 600

ttcagctcca aggagagggc gtgggggtca tcggggtggc aggggaagat ttggtattcg 660

gcgagatggg ccaatgaaat ttgagaaaga ctttgacttt gaaagtgcaa atgcacaatt 720

caacaaggaa gagattgaca gagagtttca taataaactt aaattaaaag aagataaact 780

tgagaaacag gagaagcctg taaatggtga agataaagga gactcaggag ttgataccca 840

aaacagtgaa ggaaatgccg atgaagaaga tccacttgga cctaattgct attatgacaa 900

aactaaatcc ttctttgata atatttcttg tgatgacaat agagaacgga gaccaacctg 960

ggctgaagaa agaagattaa atgctgaaac atttggaatc ccacttcgtc caaaccgtgg 1020

ccgtggggga tacagaggca gaggaggtct tggtttccgt ggtggcagag gcgtggtgg 1080

tggcagaggt ggtaccttca ctgcccctcg aggatttcgc ggtggattca gaggaggtcg 1140

tgggggccgg gagtttgcgg attttgaata taggaaagac aacaaagttg ctgcatagtc 1200

tacaaacaag tctctgaaaa taggtgaatt tctagctctt catggtcctg aacattgatt 1260

tcagtctttg caaagaatga agaagtgaat tcgctgtaca tttgtcacca gcactgggtt 1320

```
tttgttttttt gtttgttttt ccgcttaatt tcaaagataa aatgcagtta cttttggggg 1380
tggaaggctc atcttaaaac atgagcatta aatatatttg gaatagcaga aggttaagta 1440
atttcttatg tatagttaaa ctaaagcagt acttcagtgg gacttaacaa gtattttttc 1500
atcactgaaa ggtttttttt ttttatcact aaaattgtatt tggcaattgc aagttgcctg 1560
cagatagggc cgtgatactg tgttttgagc cacagaaggt tgtgtgtgtg tgtgtgtgtg 1620
tgtgtgtgtg tgtgtgtgta tgtgtgtgtc tttttcctcc tttcttttgg ggaatcctgt 1680
aatatgaggt agcttatttc gtcaattaat tagggtgctg gatggtagag aattttgtca 1740
gtcaactatg tacacacagt aaatactgtt tcttaggcaa aggtaacttt tttatatagt 1800
tgtaaaattc cattatattc cattgccaaa gaaacattaa gaactttgta tagctgtata 1860
aaaagcaact aattttttaa agaataaaca ttttaaagtc                        1900
```

<210> 31
<211> 356
<212> PRT
<213> Homo sapiens

<400> 31

```
Met Gly Ser Tyr Gly Pro Phe Gly Arg Met Pro Thr Tyr Ser Gln Phe
 1               5                  10                  15
Ser Pro Ser Ser Leu Val Gly Gln Gln Phe Gly Ala Val Gly Val Ala
                20                  25                  30
Gly Ser Ser Leu Thr Ser Phe Gly Thr Glu Thr Ser Asn Ser Gly Thr
            35                  40                  45
Leu Pro Gln Ser Ser Ala Val Gly Ser Ala Phe Thr Gln Asp Thr Arg
        50                  55                  60
Ser Leu Lys Thr Gln Leu Ser Gln Gly Arg Ser Ser Pro Gln Leu Asp
65                  70                  75                  80
Pro Leu Arg Lys Ser Pro Thr Met Glu Gln Ala Val Gln Thr Ala Ser
                85                  90                  95
Ala His Leu Pro Ala Pro Ala Ala Val Gly Arg Arg Ser Pro Val Ser
                100                 105                 110
Thr Arg Pro Leu Pro Ser Ala Ser Gln Lys Ala Gly Glu Asn Gln Glu
            115                 120                 125
His Arg Arg Ala Glu Val His Lys Val Ser Arg Pro Glu Asn Glu Gln
        130                 135                 140
```

```
Leu Arg Asn Asp Asn Lys Arg Gln Val Ala Pro Gly Ala Pro Ser Ala
145                 150             155                 160
Pro Arg Arg Gly Arg Gly Gly His Arg Gly Gly Arg Gly Arg Phe Gly
                165             170             175
Ile Arg Arg Asp Gly Pro Met Lys Phe Glu Lys Asp Phe Asp Phe Glu
                180             185             190
Ser Ala Asn Ala Gln Phe Asn Lys Glu Glu Ile Asp Arg Glu Phe His
            195             200             205
Asn Lys Leu Lys Leu Lys Glu Asp Lys Leu Glu Lys Gln Glu Lys Pro
        210             215             220
Val Asn Gly Glu Asp Lys Gly Asp Ser Gly Val Asp Thr Gln Asn Ser
225             230             235             240
Glu Gly Asn Ala Asp Glu Glu Asp Pro Leu Gly Pro Asn Cys Tyr Tyr
            245             250             255
Asp Lys Thr Lys Ser Phe Phe Asp Asn Ile Ser Cys Asp Asp Asn Arg
            260             265             270
Glu Arg Arg Pro Thr Trp Ala Glu Glu Arg Arg Leu Asn Ala Glu Thr
        275             280             285
Phe Gly Ile Pro Leu Arg Pro Asn Arg Gly Arg Gly Gly Tyr Arg Gly
    290             295             300
Arg Gly Gly Leu Gly Phe Arg Gly Gly Arg Gly Arg Gly Gly Gly Arg
305             310             315             320
Gly Gly Thr Phe Thr Ala Pro Arg Gly Phe Arg Gly Gly Phe Arg Gly
            325             330             335
Gly Arg Gly Gly Arg Glu Phe Ala Asp Phe Glu Tyr Arg Lys Asp Asn
            340             345             350
Lys Val Ala Ala
        355
```

<210> 32

<211> 1877

<212> DNA

<213> Homo sapiens

<220>

<221> CDS
<222> (127)..(840)

<400> 32

```
agcaccacca gcggcagccg ccggagccgc cgccgcagcg gggacgggga gcccccgggg 60
gccccgccac cgccgccgtc cgccgtcacc tacccggact ggatcggcca gagttactcc 120
gaggtgatga gcctcaacga gcactccatg caggcgctgt cctggcgcaa gctctacttg 180
agccgcgcca agcttaaagc ctccagccgg acctcggctc tgctctccgg cttcgccatg 240
gtggcaatgg tggaggtgca gctggacgct gaccacgact acccaccggg gctgctcatc 300
gccttcagtg cctgcaccac agtgctggtg gctgtgcacc tgtttgcgct catgatcagc 360
acctgcatcc tgcccaacat cgaggcggtg agcaacgtgc acaatctcaa ctcggtcaag 420
gagtcccccc atgagcgcat gcaccgccac atcgagctgg cctgggcctt ctccaccgtc 480
atcggcacgc tgctcttcct agctgaggtg gtgctgctct gctgggtcaa gttcttgccc 540
ctcaagaagc agccaggcca gccaaggccc accagcaagc cccccgccgg tggcgcagca 600
gccaacgtca gcaccagcgg catcaccccg ggccaggcag ccgccatcgc ctcgaccacc 660
atcatggtgc ccttcggcct gatctttatc gtcttcgcct tccacttcta ccgctcactg 720
gtcagccata agaccgaccg acagttccag gagctcaacg agctggcgga gtttgcccgc 780
ttacaggacc agctggacca cagaggggac caccccctga cgcccggcag ccactatgcc 840
taggcccatg tggtctgggc ccttccagtg ctttggcctt acgcccttcc ccatgacctt 900
gtcctgcccc agcctcacgg acagcctgtg caggggctg ggcttcagca aggggcagag 960
cgtggaggga agaggatttt tataagagaa atttctgcac tttgaaactg tcctctaaga 1020
gaataagcat ttcctgttct cccagctcca ggtccacctc ctgctgggag gcggtggggg 1080
gccaaagtgg ggccacacac tcgctgtgtc ccctctcctc ccctgtgcca gtgccacctg 1140
ggtgcctcct cctgtcctgt ccgtctcaac ctccctcccg tccagcattg agtgtgtaca 1200
tgtgtgtgtg acacataaat atactcataa ggacacctcc ttcccgtgtc ttgtatttgt 1260
tgggcctggg ctactgctca ccctggttag gtgagcctct aggaaaactt aaaacgaatt 1320
ttaagccagg tatggtggca catacctgtg gtctcagcta ttcaggaggc caaggcagga 1380
ggatctcttg agcccaggag tttgagaccc catctcaaac aaaaaataca aaaattagcc 1440
agccacgggg cctgcacttc cagctccttt gagagactga ggcaggaaga ttgcctaagc 1500
ccaggaggcc aagtctgcag tgagctatgg taacaccact gcactccaac ctgggcaaca 1560
gagggagact ctgtctctaa aaaaatagaa aaatttgccc tgcatggtgg ctcacgcctg 1620
taatcctagc cctttggaag gccaaggcgg gcagatcact tgaggtcggg agttcgagac 1680
cagcctgacc aacatggaga acccccatct gtactaaaaa tacaaaatta gctgggtttg 1740
gtggcgcatg cttgtaatcc cagctactcg ggaggctgag gcaggagaat cgcttgaacc 1800
caggaggcgg aggttgcagt gagctgagat cgcgccattg cactccagcc tgggcaacaa 1860
cagtgaaact ccgtctc 1877
```

<210> 33
<211> 238
<212> PRT
<213> Homo sapiens

<400> 33

```
Met Ser Leu Asn Glu His Ser Met Gln Ala Leu Ser Trp Arg Lys Leu
 1               5                  10                  15
Tyr Leu Ser Arg Ala Lys Leu Lys Ala Ser Ser Arg Thr Ser Ala Leu
                20                  25                  30
Leu Ser Gly Phe Ala Met Val Ala Met Val Glu Val Gln Leu Asp Ala
            35                  40                  45
Asp His Asp Tyr Pro Pro Gly Leu Leu Ile Ala Phe Ser Ala Cys Thr
        50                  55                  60
Thr Val Leu Val Ala Val His Leu Phe Ala Leu Met Ile Ser Thr Cys
65                  70                  75                  80
Ile Leu Pro Asn Ile Glu Ala Val Ser Asn Val His Asn Leu Asn Ser
                85                  90                  95
Val Lys Glu Ser Pro His Glu Arg Met His Arg His Ile Glu Leu Ala
               100                 105                 110
Trp Ala Phe Ser Thr Val Ile Gly Thr Leu Leu Phe Leu Ala Glu Val
           115                 120                 125
Val Leu Leu Cys Trp Val Lys Phe Leu Pro Leu Lys Lys Gln Pro Gly
       130                 135                 140
Gln Pro Arg Pro Thr Ser Lys Pro Pro Ala Gly Gly Ala Ala Ala Asn
145                 150                 155                 160
Val Ser Thr Ser Gly Ile Thr Pro Gly Gln Ala Ala Ala Ile Ala Ser
                165                 170                 175
Thr Thr Ile Met Val Pro Phe Gly Leu Ile Phe Ile Val Phe Ala Phe
                180                 185                 190
His Phe Tyr Arg Ser Leu Val Ser His Lys Thr Asp Arg Gln Phe Gln
           195                 200                 205
Glu Leu Asn Glu Leu Ala Glu Phe Ala Arg Leu Gln Asp Gln Leu Asp
       210                 215                 220
```

His Arg Gly Asp His Pro Leu Thr Pro Gly Ser His Tyr Ala
225   230   235

<210> 34

<211> 2598

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (24)..(1064)

<400> 34

```
agaagcaaaa gagcagagct accatgtcct cttggagcag acagcgacca aaaagcccag 60
ggggcattca accccatgtt tctagaactc tgttcctgct gctgctgttg gcagcctcag 120
cctggggggt caccctgagc cccaaagact gccaggtgtt ccgctcagac catggcagct 180
ccatctcctg tcaaccacct gccgaaatcc ccggctacct gccagccgac accgtgcacc 240
tggccgtgga attcttcaac ctgacccacc tgccagccaa cctcctccag ggcgcctcta 300
agctccaaga attgcacctc tccagcaatg ggctggaaag cctctcgccc gaattcctgc 360
ggccagtgcc gcagctgagg gtgctggatc taacccgaaa cgccctgacc gggctgccct 420
cgggcctctt ccaggcctca gccaccctgg acaccctggt attgaaagaa aaccagctgg 480
aggtcctgga ggtctcgtgg ctacacggcc tgaaagctct ggggcatctg gacctgtctg 540
ggaaccgcct ccggaaactg cccccgggc tgctggccaa cttcaccctc ctgcgcaccc 600
ttgaccttgg ggagaaccag ttggagacct gccacctga cctcctgagg ggtccgctgc 660
aattagaacg gctacatcta gaaggcaaca aattgcaagt actgggaaaa gatctcctct 720
tgccgcagcc ggacctgcgc tacctcttcc tgaacggcaa caagctggcc agggtggcag 780
ccggtgcctt ccagggcctg cggcagctgg acatgctgga cctctccaat aactcactgg 840
ccagcgtgcc cgagggggctc tgggcatccc tagggcagcc aaactgggac atgcgggatg 900
gcttcgacat ctccggcaac ccctggatct gtgaccagaa cctgagcgac ctctatcgtt 960
ggcttcaggc ccaaaaagac aagatgtttt cccagaatga cacgcgctgt gctgggcctg 1020
aagccgtgaa gggccagacg ctcctggcag tggccaagtc ccagtgagac cagggggcttg 1080
ggttgagggt ggggggtctg gtagaacact gcaacccgct taacaaataa tcctgccttt 1140
ggccgggtgc ggggggctcac gcctgtaatc ccagcacttt gggaggccca ggtgggcgga 1200
tcacgaggtc aggagatcga gaccatcttg gctaacatgg tgaaaccctg tctctactaa 1260
aaatataaaa aattagccag gcgtggtggt gggcacctgt agtcccagca actcgggagg 1320
```

```
ctgaggcagg agaatggcgt gaacttggga ggcggagctt gcggtgagcc aagatcgtgc 1380
cactgcactc tagcctgggc gacagagcaa gactgtctca aaaaaattaa aattaaaatt 1440
aaaaacaaat aatcctgcct tttacaggtg aaactcgggg ctgtccatag cggctgggac 1500
cccgtttcat ccatccatgc ttcctagaac acacgatggg ctttccttac ccatgcccaa 1560
ggtgtgccct ccgtctggaa tgccgttccc tgtttcccag atctcttgaa ctctgggttc 1620
tcccagcccc ttgtccttcc ttccagctga gccctggcca cactggggct gcctttctct 1680
gactctgtct tccccaagtc aggggctct ctgagtgcag ggtctgatgc tgagtccac 1740
ttagcttggg gtcagaacca aggggtttaa taaataaccc ttgaaaactg gatcggatga 1800
attggctttc attgtgttcc tagcatcttc tcaaatcaac ttcccaggac tccagggtga 1860
aggaggaaaa gaggcatggc ccaggccctg gggtgtggga tatggtctcc ctaggggatg 1920
acagttggga tcaatggcct gtgacttctc ctctcccttc ccccatcctg ggacctaact 1980
ggaaataaaa ccttgactgt tgcccgggtg tcattttacc agtggatttc tgccagggct 2040
tgtgtcctag gagaaggttt aagttaaacc agattgccca ggtctccaaa cgatttgtca 2100
tgctgacctg agatcatcga aggggcacc tgcccccggg caaggttgca ggggcaggat 2160
ggggctgaag ggatgagcag ggtcccgggc ccacctgctg atacagcatt ggccatgtgg 2220
gggctgcaat cggatttgga agaccctggg gcttgggggc atgtccagtt ttcccagctc 2280
cctaaaaaat gaccatgcag cctggcgccg tggctcatgc ctgtaatcca aacactttgg 2340
gaggctgagg caggcagatc accggaggtc aggagttcga gaccagactg gccaacatgg 2400
caaaaccctg tctctactaa aaatacaaaa attagccagg cacagtggca cgtgcctgta 2460
ataccagcta cttgggaggg tcaggcagga gaatcacttg aacctgggag gcggaggttg 2520
cagtgagcca agatcacgcc actgcactcc aggctgggcg acagagtgaa actgtgtctc 2580
aaaaataaaa ataaaaat                                               2598
```

<210> 35
<211> 347
<212> PRT
<213> Homo sapiens

<400> 35

```
Met Ser Ser Trp Ser Arg Gln Arg Pro Lys Ser Pro Gly Gly Ile Gln
1               5                   10                  15
Pro His Val Ser Arg Thr Leu Phe Leu Leu Leu Leu Ala Ala Ser
            20                  25                  30
Ala Trp Gly Val Thr Leu Ser Pro Lys Asp Cys Gln Val Phe Arg Ser
        35                  40                  45
```

Asp His Gly Ser Ser Ile Ser Cys Gln Pro Pro Ala Glu Ile Pro Gly
    50   55   60

Tyr Leu Pro Ala Asp Thr Val His Leu Ala Val Glu Phe Phe Asn Leu
65   70   75   80

Thr His Leu Pro Ala Asn Leu Leu Gln Gly Ala Ser Lys Leu Gln Glu
          85   90   95

Leu His Leu Ser Ser Asn Gly Leu Glu Ser Leu Ser Pro Glu Phe Leu
          100   105   110

Arg Pro Val Pro Gln Leu Arg Val Leu Asp Leu Thr Arg Asn Ala Leu
          115   120   125

Thr Gly Leu Pro Ser Gly Leu Phe Gln Ala Ser Ala Thr Leu Asp Thr
        130   135   140

Leu Val Leu Lys Glu Asn Gln Leu Glu Val Leu Glu Val Ser Trp Leu
145   150   155   160

His Gly Leu Lys Ala Leu Gly His Leu Asp Leu Ser Gly Asn Arg Leu
        165   170   175

Arg Lys Leu Pro Pro Gly Leu Leu Ala Asn Phe Thr Leu Leu Arg Thr
        180   185   190

Leu Asp Leu Gly Glu Asn Gln Leu Glu Thr Leu Pro Pro Asp Leu Leu
        195   200   205

Arg Gly Pro Leu Gln Leu Glu Arg Leu His Leu Glu Gly Asn Lys Leu
        210   215   220

Gln Val Leu Gly Lys Asp Leu Leu Leu Pro Gln Pro Asp Leu Arg Tyr
225   230   235   240

Leu Phe Leu Asn Gly Asn Lys Leu Ala Arg Val Ala Ala Gly Ala Phe
        245   250   255

Gln Gly Leu Arg Gln Leu Asp Met Leu Asp Leu Ser Asn Asn Ser Leu
        260   265   270

Ala Ser Val Pro Glu Gly Leu Trp Ala Ser Leu Gly Gln Pro Asn Trp
        275   280   285

Asp Met Arg Asp Gly Phe Asp Ile Ser Gly Asn Pro Trp Ile Cys Asp
        290   295   300

Gln Asn Leu Ser Asp Leu Tyr Arg Trp Leu Gln Ala Gln Lys Asp Lys
305   310   315   320

Met Phe Ser Gln Asn Asp Thr Arg Cys Ala Gly Pro Glu Ala Val Lys
        325   330   335

Gly Gln Thr Leu Leu Ala Val Ala Lys Ser Gln
      340   345

<210> 36
<211> 3087
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (216)..(1283)

<400> 36

```
taacaaacgc cggcgctgac aggggccgcc agcccctccg ccgcgcggag cccacgaagg 60
ggacagcgca gccggcccag agctcgggtc tccggggacc gagccttatg atctcctcat 120
tgcgtccccc tctgcccact ggacttggac ttcagatctg accccagacc tgccggctac 180
ctcgggaggg cccacctccc cgcccatcca gcaagatgcc aatcctcaag caactggtgt 240
ccagctcggt gcactccaag cgccgttccc gagcggacct cacggccgag atgatcagcg 300
ccccgctggg cgacttccgc cacaccatgc acgttggccg ggccggagac gcctttgggg 360
acacctcctt cctcaatagc aaggctggcg agcccgacgg cgagtccttg gacgaacagc 420
cctcttcttc atcttccaaa cgcagtctcc tgtccaggaa gttccggggc agcaagcggt 480
cacagtcggt gaccagggag gagcgggagc agcgtgacat gctggcctcc ctgcgggact 540
cggccctgtt tgtcaagaat gccatgtccc tgccccagct caatgagaag gaggccgcgg 600
agaagggcac cagtaagctg cccaagagcc tgtcatccag ccccgtgaag aaggccaatg 660
acggggaggg cggcgatgag gaggcgggca cggaggaggc agtgccccgt cggaatgggg 720
ccgcgggtcc acattcccct gaccccctcc tcgatgagca ggcctttggg gatctgacag 780
atctgcctgt cgtgcccaag gccacgtacg ggctgaagca tgcggagtcc atcatgtcct 840
tccacatcga cctggggccc tccatgctgg gtgacgtcct cagcatcatg gacaaggagg 900
agtgggaccc cgaggagggg gagggtggtt accatggcga tgaggcgcc gctggcacca 960
tcacccaggc tcccccgtac gccgtggcgg ccctcccct ggcaaggcag gaaggcaagg 1020
ctggcccaga cttgccctcc ctccctcccc atgctctgga ggatgagggg tgggcagcag 1080
cggcccccag ccccggctca gcccgcagca tgggcagcca caccacacgg gacagcagct 1140
ccctctccag ctgcacctca ggcatcctgg aggagcgcag ccctgccttc cggggggccgg 1200
acagggcccg ggctgctgtc tcaagacagc cagacaagga gttctccttc atggatgagg 1260
aggaggagga tgaaatccgt gtgtgaggcg gacagtgggt ggccaccggg agctcttggc 1320
```

```
tgcatcttct ccctgccccc accccactat gacctttgac cctacggcgc aggggcagcc 1380

aggacccttg attcagacca tggaccctgg accttgtaga tgagggacac tggcctggcc 1440

ctcgggtctt cggaggacgt aggggggctgg catgggtgcc gactggctgc ctgacttcat 1500

cacgctccct gcacttaggc tgcgtgggac aagggctgtg ttgtcacagc aggaataggt 1560

tttcctctgt tggcctccct ttcctccacc ctggcctcaa atggatgcca gatgccaacc 1620

ccagttctgg ccacgtacag ccagcgggtc agcccagagg cagcctcagc tccagggcta 1680

aggactctcg gctcccattt tctctgctgg cgtttctgct gtgcccagca gtggctgctg 1740

gggaagcagc tgcagcagga gggagacggt cttgcctctc agcccctccc tgccccaccc 1800

cagctcctgc cctggaaatc tggagcccct tggagctgag ctggacgggg ggccagctgc 1860

gagcatgtgt actaaacgca gccctttcca ggggaagaga acaggatgga gaatggaagg 1920

aaagcccccc aggcttcgtg aattgcaaga agggacccct ccaggatgac actaggaaca 1980

gggctagggc actcgctcag tccctagggg cttgtttgtt ctttattatt gtgtttaaat 2040

ccttatagag caatatcagg atggtgttaa taggtctgcc tcagaatgag aatcaatcct 2100

tttagaaaac ctttatacta agcctcctct tcgaaattca cagtggcgat tagcggactg 2160

gagtctggtg gcgattagcg gactggagtc tggggacatc cgtggcaaag acaccagctc 2220

aactttagtg cttcccaact ttatttagaa tgacatgggg tgggtgtctg gtgtgtgtgt 2280

tttccctacg cacctcccat agctattaac aactgaggaa ggccagtgca gaatattttt 2340

ggagaacgat ttttttttta aataatatat cattcctatg gggggaaagc cttttttttc 2400

tttttggctg agttattccc tccctcccct caataccctc agtactgact acttcccttt 2460

ctttctcag gcctccccc accgactttt gaggccaggg ttggccagat ttagcaaaac 2520

caaaacagag tgctgagtta aacgcaaatt tcaggtaaac aaaagataat tttctagcat 2580

taatatgccc cacgcaatat ttggaacact tatgtgaaaa atgatttgtt tttctgaaat 2640

tcacgtttct ctctgagtcc tgtaactgtc cccgagggga ttgagcagaa gctcgggtat 2700

gagccctgag gttgactgcc ggttattttt ctgacctggg aacagcctga cccacctccc 2760

tgtctccatg tagccagtga ggggaggggg agacacagaa ccaaccacag ccaggggcgt 2820

ccccatggcg actgtggccc ggcccctcct ctcttgcctg actctcctct cttgcctgac 2880

tctagacact aacttagttc caggttcggt gccctgttgg tgctcctgtt tccaatagct 2940

taggtcccat ggtgggggag gaacctcagg ggctatgcag cccccgccag ctgccctcga 3000

atcccgtcca ggccaattcc agattctaaa ctgatttttt tcatgatatt gtcaaaacag 3060

tgaggaaaca ttaaaaaaaa aagccct                                    3087
```

<210> 37

<211> 356

<212> PRT

<213> Homo sapiens

<400> 37

```
Met Pro Ile Leu Lys Gln Leu Val Ser Ser Ser Val His Ser Lys Arg
  1               5                  10                  15
Arg Ser Arg Ala Asp Leu Thr Ala Glu Met Ile Ser Ala Pro Leu Gly
               20                  25                  30
Asp Phe Arg His Thr Met His Val Gly Arg Ala Gly Asp Ala Phe Gly
               35                  40                  45
Asp Thr Ser Phe Leu Asn Ser Lys Ala Gly Glu Pro Asp Gly Glu Ser
            50                  55                  60
Leu Asp Glu Gln Pro Ser Ser Ser Ser Ser Lys Arg Ser Leu Leu Ser
 65                  70                  75                  80
Arg Lys Phe Arg Gly Ser Lys Arg Ser Gln Ser Val Thr Arg Gly Glu
               85                  90                  95
Arg Glu Gln Arg Asp Met Leu Gly Ser Leu Arg Asp Ser Ala Leu Phe
              100                 105                 110
Val Lys Asn Ala Met Ser Leu Pro Gln Leu Asn Glu Lys Glu Ala Ala
              115                 120                 125
Glu Lys Gly Thr Ser Lys Leu Pro Lys Ser Leu Ser Ser Ser Pro Val
              130                 135                 140
Lys Lys Ala Asn Asp Gly Glu Gly Gly Asp Glu Glu Ala Gly Thr Glu
145                 150                 155                 160
Glu Ala Val Pro Arg Arg Asn Gly Ala Ala Gly Pro His Ser Pro Asp
              165                 170                 175
Pro Leu Leu Asp Glu Gln Ala Phe Gly Asp Leu Thr Asp Leu Pro Val
              180                 185                 190
Val Pro Lys Ala Thr Tyr Gly Leu Lys His Ala Glu Ser Ile Met Ser
              195                 200                 205
Phe His Ile Asp Leu Gly Pro Ser Met Leu Gly Asp Val Leu Ser Ile
              210                 215                 220
Met Asp Lys Glu Glu Trp Asp Pro Glu Glu Gly Glu Gly Gly Tyr His
225                 230                 235                 240
Gly Asp Glu Gly Ala Ala Gly Thr Ile Thr Gln Ala Pro Pro Tyr Ala
              245                 250                 255
Val Ala Ala Pro Pro Leu Ala Arg Gln Glu Gly Lys Ala Gly Pro Asp
              260                 265                 270
```

```
Leu Pro Ser Leu Pro Ser His Ala Leu Glu Asp Glu Gly Trp Ala Ala
        275             280             285
Ala Ala Pro Ser Pro Gly Ser Ala Arg Ser Met Gly Ser His Thr Thr
    290             295             300
Arg Asp Ser Ser Ser Leu Ser Ser Cys Thr Ser Gly Ile Leu Glu Glu
305             310             315             320
Arg Ser Pro Ala Phe Arg Gly Pro Asp Arg Ala Arg Ala Ala Val Ser
                325             330             335
Arg Gln Pro Asp Lys Glu Phe Ser Phe Met Asp Glu Glu Glu Glu Asp
            340             345             350
Glu Ile Arg Val
        355·
```

<210> 38
<211> 3305
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (41)..(586)

<400> 38

```
ctctgacagg atccggggct gagggaagga ggcggcggcc atggagttgg gcgagctgct 60
ctacaacaag tctgagtaca tcgagacggc atctgggaac aaagtcagtc gccagtcagt 120
gttgtgtgga agccagaaca tcgttctcaa tggcaagacc attgtgatga atgactgtat 180
tatccgaggg gatctggcaa atgtaagagt tggacgtcat tgtgttgtga aaagtcgtag 240
tgtcataagg ccaccattca agaagttcag caaaggtgtt gcattctttc ctttacatat 300
tggagaccat gtctttattg aggaagattg tgtggtcaac gcagcacaga ttggttccta 360
tgttcatgtt gggaagaact gtgtgattgg gcgccgatgt gtgttgaaag actgctgcaa 420
aattcttgac aacacagtat acctccgga aactgtggtt ccaccattca ctgtcttctc 480
aggctgccca ggactcttct caggggagct cccggagtgc actcaggagc tgatgattga 540
cgtcaccaag agctactacc agaagttttt gcccctgacg caagtctagc atctctgcct 600
catgtcttga atctgcttga gctctaagat gaacctgggg acaaagtgag ccagtcagca 660
cctacaaaga gcttttgtgt ctttgacatc taccaccctc ctccttttaa aaaatttctt 720
```

```
tagaatttct caatcttcaa ggctctaagt gcttaagaat tcactaacag acagaccatc 780
tggaggagct gtcttcaaat gctgtgctta caccttatct atgaacagtc actttgtacc 840
attatctgtg gaacacagaa tcatctgttc ccaacactcc agcccttgg tcctgtggat 900
ggctggatcc cgcctgaaac ggacctgcag agcagcagca cccttccggt gtggaggcta 960
tgtagctggt gcgctgctca cggccattca ctgcccatgc tgagcgcctc tcacacaggt 1020
aatgcccagc ttttctgctg ctaacacatt tggccagttg ttgcagttgc tcatcatctt 1080
gggaaaggtg tttgtgactt ttcagagccc agattcctgt tgtctattaa aacttgaagg 1140
gaggggtgaa tagtgtttct ctcttcttcc caaaatgacc ttagctgtcc taggatagtt 1200
agtaaaagac tttttagcat tttgacctag ggcctttggc tttcactaaa agtggggacc 1260
tcagtatccc agattgtaat tttgccaagt gttagatttg agtctctcat gtggatgcat 1320
tagtcaggtg gttactcctt gcttcaaggt acttacctta tttcattgaa gacaccgcat 1380
ttgtgaactc ttgcttcctg gcctagaacc attcagccta ccctgtattt gccataaact 1440
ccacaattca caccaaaatg tctgtactta gagctaattc gcatatatac aggaagggct 1500
cttagaatca gtttgtgggc acagagcctc aggagtaaat gaagttacta gggctgttct 1560
taccatctcc ttctggccaa atagcacaac atttcctcgt tctgctctga cctcttagct 1620
tagaaggaag attcagaagt gaggggctaa gaaggttgtc cttgcctaat gctctgatct 1680
gtaagtgaat agggcagaac agttcagcct tgaggttaga atttagcagg agctatcctg 1740
acttaatatc cagttgtggg gtttgcaaaa caaaacagct gtatgtaatc attgccacta 1800
gttccatcta gaactccttt ctagtttgtt atttttaaaa tgtttataca taaaaccacc 1860
aaaatacata gcttcgacaa gatggaagtt tatttctctc tcccataaca gtgcagtgat 1920
agtcagctgg tccaggccag gcaaggggct ggtccatgat gtcatcaggc acccaggttc 1980
ctactgtctt gccatgtggc cacagttagc aacaaaggag gctgtaaatt tagtttctac 2040
ttgggcagcc aaaactctga ggaaggagat tctgctagta aaaaggagtg ggggaagaat 2100
ggccattggg agacaacaag cagactcaac caggcctctt tgttggcttc ctttcctcct 2160
gctgcacatg agccttcgcc gtgcatttgg agccatgaca gctgatagct ccagacctgc 2220
atcctcctag cttgggggct ctgaatgaaa ggtttcttcc cttccagttc gaatttggaa 2280
actcccaaag ttctcaatgg tttgttgtga gttccatgtc ctcttggatc agtcactgtg 2340
gccatgcatg tttggccaca tgattaatcc agtctgggtc atgacctttt cttcatccaa 2400
aacaaggtgg tgggaagaca aaaacaatag ctactacaaa caataggagt ttataattat 2460
gtgctgatgt attcgaagat gtgttgacag tcgtgagtgt gtatcctagg aaaggcgagc 2520
tggactctgt ctccatggtg gctctcaccc cagggaccta ggaacagcct gtcaccacac 2580
aattactttt ataaccctgg agatgaaaat ctccttgtcc tcaaaatact tccagaagaa 2640
caaccagatg ggaaggacct tggttgggac tctttccagt tcacttgggg cagagggaat 2700
ttaatggctc atgtagctga aaaggatggg ctagattggg cttcaggctg catcccagga 2760
ctccaaacag ggatctgtct ctttggctct cagctctgct ttcatttgag ttggctttat 2820
tcttgggctt cacagtgtgg ccccacagca ccagttattg ataaaaagag ctcccctttg 2880
```

```
ctgacagaac tgctggattt ggttctcatt ggtccagacg aggaaggtat ccagcctcaa 2940
gtcatcattg tggccaggaa gatggaatac accaaatgga caggcctggc atgtacccac 3000
agagactgag agttggtgct ggtggttgtg gtggcagatg atattacctg aagaagggac 3060
gaatgggtgc tgggcaggac aaagcatcag ctgtccagtt caggcctctc ctctttccct 3120
ggtgtcttca ttttcctccg cctccctgct gtcccttacc ctctgcccaa tctctcatta 3180
ctcctggtct tgggagttgc cttctgagga tactccactg ggggtacctg agcctggatt 3240
agagggcagg gggaggatat tgcctagcca aagtgggtgt tcaataaaaa accatttgga 3300
gatgg                                                            3305
```

<210> 39
<211> 182
<212> PRT
<213> Homo sapiens

<400> 39
```
Met Glu Leu Gly Glu Leu Leu Tyr Asn Lys Ser Glu Tyr Ile Glu Thr
1               5                   10                  15
Ala Ser Gly Asn Lys Val Ser Arg Gln Ser Val Leu Cys Gly Ser Gln
            20                  25                  30
Asn Ile Val Leu Asn Gly Lys Thr Ile Val Met Asn Asp Cys Ile Ile
            35                  40                  45
Arg Gly Asp Leu Ala Asn Val Arg Val Gly Arg His Cys Val Val Lys
        50                  55                  60
Ser Arg Ser Val Ile Arg Pro Phe Lys Lys Phe Ser Lys Gly Val
65                  70                  75                  80
Ala Phe Phe Pro Leu His Ile Gly Asp His Val Phe Ile Glu Glu Asp
                85                  90                  95
Cys Val Val Asn Ala Ala Gln Ile Gly Ser Tyr Val His Val Gly Lys
            100                 105                 110
Asn Cys Val Ile Gly Arg Arg Cys Val Leu Lys Asp Cys Cys Lys Ile
            115                 120                 125
Leu Asp Asn Thr Val Leu Pro Pro Glu Thr Val Val Pro Pro Phe Thr
        130                 135                 140
Val Phe Ser Gly Cys Pro Gly Leu Phe Ser Gly Glu Leu Pro Glu Cys
145                 150                 155                 160
```

Thr Gln Glu Leu Met Ile Asp Val Thr Lys Ser Tyr Tyr Gln Lys Phe
                165   170   175
Leu Pro Leu Thr Gln Val
        180

<210> 40

<211> 2252

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (451)..(1269)

<400> 40

```
catgcagcgc ggctgggtcc cgcggcgccc ggatcgggga agtgaaagtg cctcggagga 60
ggagggccgg tccggcagtg cagccgcctc acaggtcggc ggacgggcca ggcgggcggc 120
ctcctgaacc gaaccgaatc ggctcctcgg gccgtcgtcc tcccgcccct cctcgcccgc 180
cgccggagtt ttctttcggt ttcttccaag attcctggcc ttccctcgac ggagccgggc 240
ccagtgcggg ggcgcagggc gcgggagctc cacctcctcg gctttccctg cgtccagagg 300
ctggcatggc gcggccgag tactgaaagc acggtcgggg cacagcaggg ccggggggtg 360
cagctggctc gcgcctcctc tccggccgcc gtctcctccg gtccccggcg aaagccattg 420
agacaccagc tggacgtcac gcgccggagc atgtctggga gtcagagcga ggtggctcca 480
tccccgcaga gtccgcggag ccccgagatg gggcgggact tgcggcccgg gtccgcgtg 540
ctcctgctcc tgcttctgct cctgctggtg tacctgactc agccaggcaa tggcaacgag 600
ggcagcgtca ctggaagttg ttattgtggt aaaagaattt cttccgactc ccgccatcg 660
gttcagttca tgaatcgtct ccggaaacac ctgagagctt accatcggtg tctatactac 720
acgaggttcc agctcctttc ctggagcgtg tgtggaggca acaaggaccc atgggttcag 780
gaattgatga gctgtcttga tctcaaagaa tgtggacatg cttactcggg gattgtggcc 840
caccagaagc atttacttcc taccagcccc ccaatttctc aggcctcaga gggggcatct 900
tcagatatcc tcacccctgc ccagatgctc ctgtccacct tgcagtccac tcagcgcccc 960
accctcccag taggatcact gtcctcggac aaagagctca ctcgtcccaa tgaaaccacc 1020
attcacactg cgggccacag tctggcagct gggcctgagg ctggggagaa ccagaagcag 1080
ccggaaaaaa atgctggtcc cacagccagg acatcagcca cagtgccagt cctgtgcctc 1140
ctggccatca tcttcatcct caccgcagcc ctttcctatg tgctgtgcaa gaggaggagg 1200
```

```
gggcagtcac cgcagtcctc tccagatctg ccggttcatt atatacctgt ggcacctgac 1260
tctaatacct gagccaagaa tggaagcttg tgaggagacg gactctatgt tgcccaggct 1320
gttatggaac tcctgagtca agtgatcctc ccaccttggc ctctgaaggt gcgaggatta 1380
taggcgtcac ctaccacatc cagcctacac gtatttgtta atatctaaca taggactaac 1440
cagccactgc cctctcttag gcccctcatt taaaaacggt taactataaa atctgctttt 1500
cacactgggt gataataact tggacaaatt ctatgtgtat tttgttttgt tttgctttgc 1560
tttgttttga gacggagtct cgctctgtca tccaggctgg agtgcagtgg catgatctcg 1620
gctcactgca accccccatct cccaggttca agcgattctc ctgcctcctc ctgagtagct 1680
gggactacag gtgctcacca ccacacccag ctaattttt gtatttttag tagagacggg 1740
gtttcaccat gttgaccagg ctggtctcga actcctgacc tggtgatctg cccacccagg 1800
cctcccaaag tgctgggatt aaaggtgtga gccaccatgc ctggccctat gtgtgttttt 1860
taactactaa aaattatttt tgtaatgatt gagtcttctt tatggaaaca actggcctca 1920
gcccttgcgc ccttactgtg attcctggct ccattttttg ctgatggttc ccctcgtcc 1980
caaatctctc tcccagtaca ccagttgttc ctcccccacc tcagccctct cctgcatcct 2040
cctgtacccg caacgaaggc ctgggctttc ccaccctccc tccttagcag gtgccgtgct 2100
gggacaccat acgggttggt ttcacctcct cagtcccttg cctaccccag tgagagtctg 2160
atcttgtttt tattgttatt gcttttatta ttattgcttt tattatcatt aaaactctag 2220
ttcttgtttt gtctctccga aaaaaaaaaa ag                               2252
```

<210> 41
<211> 273
<212> PRT
<213> Homo sapiens

<400> 41
```
Met Ser Gly Ser Gln Ser Glu Val Ala Pro Ser Pro Gln Ser Pro Arg
1               5                   10                  15
Ser Pro Glu Met Gly Arg Asp Leu Arg Pro Gly Ser Arg Val Leu Leu
            20                  25                  30
Leu Leu Leu Leu Leu Leu Leu Val Tyr Leu Thr Gln Pro Gly Asn Gly
        35                  40                  45
Asn Glu Gly Ser Val Thr Gly Ser Cys Tyr Cys Gly Lys Arg Ile Ser
    50                  55                  60
Ser Asp Ser Pro Pro Ser Val Gln Phe Met Asn Arg Leu Arg Lys His
65              70                  75                  80
```

Leu Arg Ala Tyr His Arg Cys Leu Tyr Tyr Thr Arg Phe Gln Leu Leu
                85   90   95

Ser Trp Ser Val Cys Gly Gly Asn Lys Asp Pro Trp Val Gln Glu Leu
               100   105   110

Met Ser Cys Leu Asp Leu Lys Glu Cys Gly His Ala Tyr Ser Gly Ile
           115   120   125

Val Ala His Gln Lys His Leu Leu Pro Thr Ser Pro Pro Ile Ser Gln
       130   135   140

Ala Ser Glu Gly Ala Ser Ser Asp Ile Leu Thr Pro Ala Gln Met Leu
145   150   155   160

Leu Ser Thr Leu Gln Ser Thr Gln Arg Pro Thr Leu Pro Val Gly Ser
               165   170   175

Leu Ser Ser Asp Lys Glu Leu Thr Arg Pro Asn Glu Thr Thr Ile His
               180   185   190

Thr Ala Gly His Ser Leu Ala Ala Gly Pro Glu Ala Gly Glu Asn Gln
           195   200   205

Lys Gln Pro Glu Lys Asn Ala Gly Pro Thr Ala Arg Thr Ser Ala Thr
       210   215   220

Val Pro Val Leu Cys Leu Leu Ala Ile Ile Phe Ile Leu Thr Ala Ala
225   230   235   240

Leu Ser Tyr Val Leu Cys Lys Arg Arg Arg Gly Gln Ser Pro Gln Ser
               245   250   255

Ser Pro Asp Leu Pro Val His Tyr Ile Pro Val Ala Pro Asp Ser Asn
               260   265   270

Thr

<210> 42

<211> 3119

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (94)..(1212)

<400> 42

aagtaactcg ggaagacgac caagcgggag cgggagcggg agcgggagcc ggagcgagag 60

cgcgcgggcg cggccgacag tgcctgattt gagatggggt cccaggtctc ggtggaatcg 120

ggagctctgc acgtggtgat tgtgggtggg ggctttggcg ggatcgcagc agccagccag 180

ctgcaggccc tgaacgtccc cttcatgctg gtggacatga aggactcctt ccaccacaat 240

gtggctgctc tccgagcctc cgtggagaca gggttcgcca aaaagacatt catttcttac 300

tcggtgactt tcaaggacaa cttccggcag gggctagtag tggggataga cctgaagaac 360

cagatggtgc tgctgcaggg tggcgaggcc ctgcccttct ctcatcttat cctggccacg 420

ggcagcactg ggcccttccc gggcaagttt aatgaggttt ccagccagca ggccgctatc 480

caggcctatg aggacatggt gaggcaggtc cagcgctcac ggttcatcgt ggtggtggga 540

ggaggctcgg ctggagtgga gatggcagca gagattaaaa cagaatatcc tgagaaagag 600

gtcactctca ttcactccca agtggccctg gctgacaagg agctcctgcc ctccgtccgg 660

caggaagtga aggagatcct cctccggaag ggcgtgcagc tgctgctgag tgagcgggtg 720

agcaatctgg aggagctgcc tctcaatgag tatcgagagt acatcaaagt gcagacggac 780

aaaggcacag aggtggccac caacctggtg attctctgca ccggcatcaa gatcaacagc 840

tccgcctacc gcaaagcatt tgagagcaga ctagccagca gtggtgctct gagagtgaac 900

gagcacctcc aggtggaggg ccacagcaac gtctacgcca ttggtgactg tgccgacgtg 960

aggacgccca agatggccta tcttgccggc ctccacgcca acatcgccgt ggccaacatc 1020

gtcaactctg tgaagcagcg gcctctccag gcctacaagc cgggtgcact gacgttcctc 1080

ctgtccatgg ggagaaatga cggtgtgggc caaatcagtg gcttctatgt gggccggctc 1140

atggttcggc tgaccaagag ccgggacctg ttcgtctcta cgagctggaa aaccatgagg 1200

cagtctccac cttgatggag aggccaggcg ggagaactac cgcagcaggt gggcgtacgg 1260

actgcttggc gcatggcacc cgcctggcaa gtgctagaac taatgctatt cttctggaat 1320

aagatgccaa tgatgtggtg gctagaaatg caacttgtat aaaacaaaaa tgggagagag 1380

agaggtatta aacaaatacc ccccttagag gatactttct gggtttggaa ggtgtgcttg 1440

ctgtggtact gggtgagcgg ctcatgtgtg ctggctgcat ggtgctgggg aggccacagc 1500

cagcccttcc tctgcacctg cctcctctgg gatgtgcatg tgtgtgtatg tgcttgtggt 1560

catgacgcgt gccatttaga gctctcagag cagggcagat tgctgggctc tggtggccag 1620

tgtctgtctg tgagggcagg aaggagagct gcacattgag aacaaaggag ggacctgagg 1680

tggagagagg cccagcaccc caaatctctg ccatcacacg gtcggggagc ccatacattc 1740

tgcaacaacc agggacttca caggagcctt gttttcaatt tgctaacagg tgcataatcc 1800

ctgtgctcct taagcctcat ggccttccta catttccact ttatttgttt gtttgtttat 1860

ttatttttga gacagtctcg ccctgtcacc caggctggag tgcagtggca cgatctcagc 1920

tcactgcaac ctacgccttc tgggttcacg tgattctctt gccttagcct cccaagtagc 1980

tgggactaca ggcacgtgcc accatgcctg gctaattttt gtattttta aatagagacg 2040

```
gggtttcact gtgttggcca ggctggtctc gaacacctga cctcaggtga tccattcgtc 2100
ttggcctctc gaagtgctgg gattccaggc gtgagccact gcggccagca catttccact 2160
tttagatcct actccatacc acaggtttca tttaagaaga aagagctaga taaatgtgct 2220
cttctggtta ccccaccctg acagagtgca tttttacacg gctagcaggg gttgagactg 2280
cagcctggcc tgccagccat tggaggtgtt taaggaaggg cagataatgt gactctttgc 2340
ggggtgccat ctgcttaccc attagcgagc agaggggggtt tctgcgggtg accccccagca 2400
tatttctagg ttacttatgg gcagatttgt aagtgacaaa actccagctg atgctgggaa 2460
tggggagagg gcccttgagg gactttgtgg ttttgtgctt ctggtttcct ggccaacccc 2520
aggtcactt gtctggaggc ccagctgggc actaatgtct gccaccgact atgttacagt 2580
gtataaatga ttcctctatt tgggagagat cttccaatcc agaggagccc ctcttggact 2640
gcctgggtta aatctgcata gcagaagtgg ttgatgagtt catctgaaga aattcaggcc 2700
ccacctcccc accctgcccc tccctgctcc cttttgatgg tggcctctgg gtactcgggc 2760
agagtccttg ggacaccagc ctctctgggg ttctcaggcc atcccgttgg ggctgtcgcc 2820
caggcctaag tgagtcgtgt gcctctattg gaggatggct gttcccctgg tggttgcatc 2880
caagtatctg tctttcttta tggaccacga agggaagccc accttcctgg aggcaggacc 2940
ttcggcctaa gaaacacagg ccctggtgct atctgacctg gggtccagcg aggtgggaat 3000
cccagtgtgt gagcgacagg ccttcttcta ttgacttaca atattctaga aggacctacg 3060
tgtggggaca cagttttcca aactgaggaa aatgttgcaa taaaagaata tgttgtaag 3119
```

<210> 43
<211> 373
<212> PRT
<213> Homo sapiens

<400> 43

```
Met Gly Ser Gln Val Ser Val Glu Ser Gly Ala Leu His Val Val Ile
1               5                   10                  15

Val Gly Gly Gly Phe Gly Gly Ile Ala Ala Ala Ser Gln Leu Gln Ala
                20                  25                  30

Leu Asn Val Pro Phe Met Leu Val Asp Met Lys Asp Ser Phe His His
                35                  40                  45

Asn Val Ala Ala Leu Arg Ala Ser Val Glu Thr Gly Phe Ala Lys Lys
        50                  55                  60

Thr Phe Ile Ser Tyr Ser Val Thr Phe Lys Asp Asn Phe Arg Gln Gly
65                  70                  75                  80
```

Leu Val Val Gly Ile Asp Leu Lys Asn Gln Met Val Leu Leu Gln Gly
                85   90   95

Gly Glu Ala Leu Pro Phe Ser His Leu Ile Leu Ala Thr Gly Ser Thr
               100   105   110

Gly Pro Phe Pro Gly Lys Phe Asn Glu Val Ser Ser Gln Gln Ala Ala
               115   120   125

Ile Gln Ala Tyr Glu Asp Met Val Arg Gln Val Gln Arg Ser Arg Phe
             130   135   140

Ile Val Val Val Gly Gly Gly Ser Ala Gly Val Glu Met Ala Ala Glu
145   150   155   160

Ile Lys Thr Glu Tyr Pro Glu Lys Glu Val Thr Leu Ile His Ser Gln
               165   170   175

Val Ala Leu Ala Asp Lys Glu Leu Leu Pro Ser Val Arg Gln Glu Val
               180   185   190

Lys Glu Ile Leu Leu Arg Lys Gly Val Gln Leu Leu Leu Ser Glu Arg
             195   200   205

Val Ser Asn Leu Glu Glu Leu Pro Leu Asn Glu Tyr Arg Glu Tyr Ile
     210   215   220

Lys Val Gln Thr Asp Lys Gly Thr Glu Val Ala Thr Asn Leu Val Ile
225   230   235   240

Leu Cys Thr Gly Ile Lys Ile Asn Ser Ser Ala Tyr Arg Lys Ala Phe
               245   250   255

Glu Ser Arg Leu Ala Ser Ser Gly Ala Leu Arg Val Asn Glu His Leu
               260   265   270

Gln Val Glu Gly His Ser Asn Val Tyr Ala Ile Gly Asp Cys Ala Asp
             275   280   285

Val Arg Thr Pro Lys Met Ala Tyr Leu Ala Gly Leu His Ala Asn Ile
     290   295   300

Ala Val Ala Asn Ile Val Asn Ser Val Lys Gln Arg Pro Leu Gln Ala
305   310   315   320

Tyr Lys Pro Gly Ala Leu Thr Phe Leu Leu Ser Met Gly Arg Asn Asp
               325   330   335

Gly Val Gly Gln Ile Ser Gly Phe Tyr Val Gly Arg Leu Met Val Arg
             340   345   350

Leu Thr Lys Ser Arg Asp Leu Phe Val Ser Thr Ser Trp Lys Thr Met
         355   360   365

Arg Gln Ser Pro Pro
370

<210> 44
<211> 3111
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (39)..(2762)

<400> 44
```
attataatta cgatgatgaa gatgaagatg aaaatgcaat ggatgctgat ggtggtgatg 60
atgatgatca agggagtgat gatgaataca gtgatgatga tgacatgagt tggaaagtga 120
gacgtgcagc tgcgaagtgc ttggatgccg tagttagcac aaggcatgaa atgcttccag 180
aattctacaa gaccgtctct cctgcactaa tatccagatt taaagagcgt gaagagaatg 240
taaaggcaga tgttttcac gcataccttt ctcttttgaa gcaaactcgt cctgtacaaa 300
gttggctatg tgaccctgat gcaatggagc agggagaaac acctttaaca atgcttcaga 360
gtcaggttcc caacattgtt aaagctcttc acaaacagat gaaagaaaaa agtgtgaaga 420
cccgacagtg ttgttttaac atattaactg agctggtaaa tgtattacct ggggccctaa 480
ctcaacacat tcctgtactt gtaccaggaa tcattttctc actgaatgat aaatcaagct 540
catcgaattt gaagatcgat gctttgtcat gtctatacgt aatcctctgt aaccattctc 600
ctcaagtctt ccatcctcac gttcaggctt tggttcctcc agtggtggct tgtgttggag 660
acccatttta caaaattaca tctgaggcac ttcttgttac tcaacagctt gtcaaagtaa 720
ttcgtccttt agatcagcct tcctcgtttg atgcaactcc ttatatcaaa gatctattta 780
cctgtaccat taagagatta aaagcagctg acattgatca ggaagtcaag gaaagggcta 840
tttcctgtat gggacaaatt atttgcaacc ttggagacaa tttgggttct gacttgccta 900
atacacttca gattttcttg gagagactaa agaatgaaat taccaggtta actacagtaa 960
aggcattgac actgattgct gggtcacctt tgaagataga tttgaggcct gttctgggag 1020
aagggttcc tatccttgct tcatttctta gaaaaaacca gagagctttg aaactgggta 1080
ctctttctgc ccttgatatt ctaataaaaa actatagtga cagcttgaca gctgccatga 1140
ttgatgcagt tctagatgag ctcccacctc ttatcagcga aagtgatatg catgtttcac 1200
aaatggccat cagtttttctt accactttgg caaaagtata tccctcctcc ctttcaaaga 1260
taagtggatc cattctcaat gaacttattg gacttgtgag atcacccta ttgcaggggg 1320
```

```
gagctcttag tgccatgcta gactttttcc aagctctggt tgtcactgga acaaataatt 1380
taggatacat ggatttgttg cgcatgctga ctggtccagt ttactctcag agcacagctc 1440
ttactcataa gcagtcttat tattccattg ccaaatgtgt agctgccctt actcgagcat 1500
gccctaaaga gggaccagct gtagtaggtc agtttattca agatgtcaag aactcaaggt 1560
ctacagattc cattcgtctc ttagctctac tttctcttgg agaagttggg catcatattg 1620
acttaagtgg acagttggaa ctaaaatctg taatactaga agctttctca tctcctagtg 1680
aagaagtcaa atcagctgca tcctatgcat taggcagcat tagtgtgggc aaccttcctg 1740
aatatctgcc gtttgtcctg caagaaataa ctagtcaacc caaaaggcag tatcttttac 1800
ttcattcctt gaaggaaatt attagctctg catcagtggt gggccttaaa ccatatgttg 1860
aaaacatctg ggccttatta ctaaagcact gtgagtgtgc agaggaagga accagaaatg 1920
ttgttgctga atgtctagga aaactcactc taattgatcc agaaactctc cttccacggc 1980
ttaaggggta cttgatatca ggctcatcat atgcccgaag ctcagtggtt acggctgtga 2040
aatttacaat ttctgaccat ccacaaccta ttgatccact gttaaagaac tgcataggtg 2100
atttcctaaa aactttggaa gacccagatt tgaatgtgag aagagtagcc ttggtcacat 2160
ttaattcagc agcacataac aagccatcat taataaggga tctattggat actgttcttc 2220
cacatcttta caatgaaaca aaagttagaa aggagcttat aagagaggta gaaatgggtc 2280
catttaaaca tacggttgat gatggtctgg atattagaaa ggcagcattt gagtgtatgt 2340
acacacttct agacagttgt cttgatagac ttgatatctt tgaatttcta aatcatgttg 2400
aagatggttt gaaggaccat tatgatatta agatgctgac atttttaatg ttggtgagac 2460
tgtctaccct ttgtccaagt gcagtactgc agaggttgga ccgacttgtt gagccattac 2520
gtgcaacatg tacaactaag gtaaaggcaa actcagtaaa gcaggagttt gaaaaacaag 2580
atgaattaaa gcgatctgcc acgagagcag tagcagcact actaaccatt ccagaagcag 2640
agaagagtcc actgatgagt gaattccagt cacagatcag ttctaaccct gagctggcgg 2700
ctatctttga aagtatccag aaagattcat catctactaa cttggaatca atggacacta 2760
gttagatgtt tgttcaccat ggggaccatt acatatgacc atacaatgca ctgaattgac 2820
aggttaatca taagacatgg aaagagaagt gtctaaaagc ttcaaaatgt tccacttttt 2880
tttccttcat ggagactgtt tgtttggctt tcttccattg ttgttttttgt agcatttatt 2940
tcagaaatgt gtatttccat aatccagagg ttgtaaaacc actagtgttt tagtggttac 3000
agcaacattt gaaatggaaa ctagaagtta ggattttatg gagtatggag ataggagtcca 3060
gtatctatct accctgtaat gtttaggatt aaaatgttaa aattttgtga c          3111
```

```
<210> 45
<211> 908
<212> PRT
<213> Homo sapiens
```

<400> 45

Met Asp Ala Asp Gly Gly Asp Asp Asp Gln Gly Ser Asp Asp Glu
1   5   10   15
Tyr Ser Asp Asp Asp Asp Met Ser Trp Lys Val Arg Arg Ala Ala Ala
            20   25   30
Lys Cys Leu Asp Ala Val Val Ser Thr Arg His Glu Met Leu Pro Glu
        35   40   45
Phe Tyr Lys Thr Val Ser Pro Ala Leu Ile Ser Arg Phe Lys Glu Arg
    50   55   60
Glu Glu Asn Val Lys Ala Asp Val Phe His Ala Tyr Leu Ser Leu Leu
65   70   75   80
Lys Gln Thr Arg Pro Val Gln Ser Trp Leu Cys Asp Pro Asp Ala Met
                85   90   95
Glu Gln Gly Glu Thr Pro Leu Thr Met Leu Gln Ser Gln Val Pro Asn
                100   105   110
Ile Val Lys Ala Leu His Lys Gln Met Lys Glu Lys Ser Val Lys Thr
        115   120   125
Arg Gln Cys Cys Phe Asn Ile Leu Thr Glu Leu Val Asn Val Leu Pro
    130   135   140
Gly Ala Leu Thr Gln His Ile Pro Val Leu Val Pro Gly Ile Ile Phe
145   150   155   160
Ser Leu Asn Asp Lys Ser Ser Ser Ser Asn Leu Lys Ile Asp Ala Leu
                165   170   175
Ser Cys Leu Tyr Val Ile Leu Cys Asn His Ser Pro Gln Val Phe His
                180   185   190
Pro His Val Gln Ala Leu Val Pro Pro Val Val Ala Cys Val Gly Asp
            195   200   205
Pro Phe Tyr Lys Ile Thr Ser Glu Ala Leu Leu Val Thr Gln Gln Leu
    210   215   220
Val Lys Val Ile Arg Pro Leu Asp Gln Pro Ser Ser Phe Asp Ala Thr
225   230   235   240
Pro Tyr Ile Lys Asp Leu Phe Thr Cys Thr Ile Lys Arg Leu Lys Ala
                245   250   255
Ala Asp Ile Asp Gln Glu Val Lys Glu Arg Ala Ile Ser Cys Met Gly
                260   265   270

Gln Ile Ile Cys Asn Leu Gly Asp Asn Leu Gly Ser Asp Leu Pro Asn
        275   280   285

Thr Leu Gln Ile Phe Leu Glu Arg Leu Lys Asn Glu Ile Thr Arg Leu
        290   295   300

Thr Thr Val Lys Ala Leu Thr Leu Ile Ala Gly Ser Pro Leu Lys Ile
305   310   315   320

Asp Leu Arg Pro Val Leu Gly Glu Gly Val Pro Ile Leu Ala Ser Phe
                325   330   335

Leu Arg Lys Asn Gln Arg Ala Leu Lys Leu Gly Thr Leu Ser Ala Leu
                340   345   350

Asp Ile Leu Ile Lys Asn Tyr Ser Asp Ser Leu Thr Ala Ala Met Ile
        355   360   365

Asp Ala Val Leu Asp Glu Leu Pro Pro Leu Ile Ser Glu Ser Asp Met
        370   375   380

His Val Ser Gln Met Ala Ile Ser Phe Leu Thr Thr Leu Ala Lys Val
385   390   395   400

Tyr Pro Ser Ser Leu Ser Lys Ile Ser Gly Ser Ile Leu Asn Glu Leu
                405   410   415

Ile Gly Leu Val Arg Ser Pro Leu Leu Gln Gly Gly Ala Leu Ser Ala
                420   425   430

Met Leu Asp Phe Phe Gln Ala Leu Val Val Thr Gly Thr Asn Asn Leu
        435   440   445

Gly Tyr Met Asp Leu Leu Arg Met Leu Thr Gly Pro Val Tyr Ser Gln
        450   455   460

Ser Thr Ala Leu Thr His Lys Gln Ser Tyr Tyr Ser Ile Ala Lys Cys
465   470   475   480

Val Ala Ala Leu Thr Arg Ala Cys Pro Lys Glu Gly Pro Ala Val Val
                485   490   495

Gly Gln Phe Ile Gln Asp Val Lys Asn Ser Arg Ser Thr Asp Ser Ile
                500   505   510

Arg Leu Leu Ala Leu Leu Ser Leu Gly Glu Val Gly His His Ile Asp
        515   520   525

Leu Ser Gly Gln Leu Glu Leu Lys Ser Val Ile Leu Glu Ala Phe Ser
        530   535   540

Ser Pro Ser Glu Glu Val Lys Ser Ala Ala Ser Tyr Ala Leu Gly Ser
545   550   555   560

Ile Ser Val Gly Asn Leu Pro Glu Tyr Leu Pro Phe Val Leu Gln Glu
565 570 575

Ile Thr Ser Gln Pro Lys Arg Gln Tyr Leu Leu Leu His Ser Leu Lys
580 585 590

Glu Ile Ile Ser Ser Ala Ser Val Val Gly Leu Lys Pro Tyr Val Glu
595 600 605

Asn Ile Trp Ala Leu Leu Leu Lys His Cys Glu Cys Ala Glu Glu Gly
610 615 620

Thr Arg Asn Val Val Ala Glu Cys Leu Gly Lys Leu Thr Leu Ile Asp
625 630 635 640

Pro Glu Thr Leu Leu Pro Arg Leu Lys Gly Tyr Leu Ile Ser Gly Ser
645 650 655

Ser Tyr Ala Arg Ser Ser Val Val Thr Ala Val Lys Phe Thr Ile Ser
660 665 670

Asp His Pro Gln Pro Ile Asp Pro Leu Leu Lys Asn Cys Ile Gly Asp
675 680 685

Phe Leu Lys Thr Leu Glu Asp Pro Asp Leu Asn Val Arg Arg Val Ala
690 695 700

Leu Val Thr Phe Asn Ser Ala Ala His Asn Lys Pro Ser Leu Ile Arg
705 710 715 720

Asp Leu Leu Asp Thr Val Leu Pro His Leu Tyr Asn Glu Thr Lys Val
725 730 735

Arg Lys Glu Leu Ile Arg Glu Val Glu Met Gly Pro Phe Lys His Thr
740 745 750

Val Asp Asp Gly Leu Asp Ile Arg Lys Ala Ala Phe Glu Cys Met Tyr
755 760 765

Thr Leu Leu Asp Ser Cys Leu Asp Arg Leu Asp Ile Phe Glu Phe Leu
770 775 780

Asn His Val Glu Asp Gly Leu Lys Asp His Tyr Asp Ile Lys Met Leu
785 790 795 800

Thr Phe Leu Met Leu Val Arg Leu Ser Thr Leu Cys Pro Ser Ala Val
805 810 815

Leu Gln Arg Leu Asp Arg Leu Val Glu Pro Leu Arg Ala Thr Cys Thr
820 825 830

Thr Lys Val Lys Ala Asn Ser Val Lys Gln Glu Phe Glu Lys Gln Asp
835 840 845

Glu Leu Lys Arg Ser Ala Thr Arg Ala Val Ala Ala Leu Leu Thr Ile
    850   855   860
Pro Glu Ala Glu Lys Ser Pro Leu Met Ser Glu Phe Gln Ser Gln Ile
865   870   875   880
Ser Ser Asn Pro Glu Leu Ala Ala Ile Phe Glu Ser Ile Gln Lys Asp
                885   890   895
Ser Ser Ser Thr Asn Leu Glu Ser Met Asp Thr Ser
            900   905

<210> 46
<211> 1599
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (156)..(623)

<400> 46
agtagccgcc tctgccgccg cggagcttcc cgaacctctt cagccgcccg gagccgctcc 60
cggagcccgg ccgtagaggc tgcaatcgca gccgggagcc cgcagcccgc gccccgagcc 120
cgccgccgcc cttcgagggc gccccaggcc gcgccatggt gaaggtgacg ttcaactccg 180
ctctggccca gaaggaggcc aagaaggacg agcccaagag cggcgaggag gcgctcatca 240
tcccccccga cgccgtcgcg gtggactgca aggacccaga tgatgtggta ccagttggcc 300
aaagaagagc ctggtgttgg tgcatgtgct ttggactagc atttatgctt gcaggtgtta 360
ttctaggagg agcatacttg tacaaatatt ttgcacttca accagatgac gtgtactact 420
gtggaataaa gtacatcaaa gatgatgtca tcttaaatga gccctctgca gatgccccag 480
ctgctctcta ccagacaatt gaagaaaata ttaaaatctt tgagaagaag aagttgaatt 540
tatcagtgtg cctgtcccag agtttgcaga tagtgatcct gccaacattg ttcatgactt 600
taacaagaaa cttacagcct atttagatct taacctggat aagtgctatg tgatccctct 660
gaacacttcc attgttatgc cacccagaaa cctactggag ttacttatta acatcaaggc 720
tggaacctat ttgcctcagt cctatctgat tcatgagcac atggttatta ctgatcgcat 780
tgaaaacatt gatcacctgg gtttctttat ttatcgactg tgtcatgaca aggaaactta 840
caaactgcaa cgcagagaaa ctattaaagg tattcagaaa cgtgaagcca gcaattgttt 900
cgcaattcgg catttttgaaa acaaatttgc cgtggaaact ttaatttgtt cttgaacagt 960

```
caagaaaaac attattgagg aaaattaata tcacagcata accccaccct ttacattttg 1020
tgcagtgatt attttttaaa gtcttctttc atgtaagtag caaacagggc tttactatct 1080
tttcatctca ttaattcaat taaaaccatt accttaaaat tttttttcttt cgaagtgtgg 1140
tgtcttttat atttgaatta gtaactgtat gaagtcatag ataatagtac atgtcacctt 1200
aggtagtagg aagaattaca atttctttaa atcatttatc tggattttta tgttttatta 1260
gcattttcaa gaagacggat tatctagaga ataatcatat atatgcatac gtaaaaatgg 1320
accacagtga cttatttgta gttgttagtt gccctgctac ctagtttgtt agtgcatttg 1380
agcacacatt ttaattttcc tctaattaaa atgtgcagta ttttcaatgt caaatatatt 1440
taactattta gagaatgatt tccacccttta tgttttaata tcctaggcat ctgctgtaat 1500
aatattttag aaaatgtttg gaatttaaga aataacttgt gttactaatt tgtataaccc 1560
atatctgtgc aatggaatat aaatatcaca aagttgttt                        1599
```

<210> 47

<211> 156

<212> PRT

<213> Homo sapiens

<400> 47

```
Met Val Lys Val Thr Phe Asn Ser Ala Leu Ala Gln Lys Glu Ala Lys
 1               5                  10                  15

Lys Asp Glu Pro Lys Ser Gly Glu Glu Ala Leu Ile Ile Pro Pro Asp
                20                  25                  30

Ala Val Ala Val Asp Cys Lys Asp Pro Asp Asp Val Val Pro Val Gly
            35                  40                  45

Gln Arg Arg Ala Trp Cys Trp Cys Met Cys Phe Gly Leu Ala Phe Met
        50                  55                  60

Leu Ala Gly Val Ile Leu Gly Gly Ala Tyr Leu Tyr Lys Tyr Phe Ala
65                  70                  75                  80

Leu Gln Pro Asp Asp Val Tyr Tyr Cys Gly Ile Lys Tyr Ile Lys Asp
                85                  90                  95

Asp Val Ile Leu Asn Glu Pro Ser Ala Asp Ala Pro Ala Ala Leu Tyr
            100                 105                 110

Gln Thr Ile Glu Glu Asn Ile Lys Ile Phe Glu Lys Lys Lys Leu Asn
        115                 120                 125

Leu Ser Val Cys Leu Ser Gln Ser Leu Gln Ile Val Ile Leu Pro Thr
```

```
                130                    135                    140
      Leu Phe Met Thr Leu Thr Arg Asn Leu Gln Pro Ile
      145                    150                    155
```

<210> 48
<211> 3733
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (20)..(1000)

<400> 48

```
agcggcgggc aggccgggca tggcgtccat ggcggcggcg atcgcggctt cgcgctcggc 60
ggtcatgagc gggaaccggc ctctggacga ccgggagcga aagcgcttca cttacttctc 120
gtcgctgagc cccatggcca ggaagatcat gcaggacaag gagaagatcc gcgagaagta 180
cgggcccgag tgggcgcggc tgccgcccgc gcagcaggac gagatcatcg accggtgcct 240
ggtggggccg cgcgccccgg cgccccgaga ccccggggac tcggaggagc tcacgcgctt 300
ccccggcttg cgcgggccca cgggccagaa ggtggtgcgc ttcggggacg aggatctaac 360
ttggcaagat gagcactctg cccctttctc ctgggaaaca aagagtcaga tggagttcag 420
tatctccgcc ctatccatcc aggagccgag caacggcacc gccgccagcg agcccagacc 480
actgtccaaa gcttcccagg gctcccaggc cctcaagtcc tcccaaggca gcaggtcctc 540
cagcctggac gccctgggcc ccaccaggaa ggaggaggaa gcgtcattct ggaagatcaa 600
tgctgagcgg tcccgagggg aggggcctga ggccgagttc cagtcgctga cccctagcca 660
gatcaagtcc atggagaagg gggaaaaggt cttgcctccc tgctaccggc aggaacctgc 720
cccgaaggac agggaggcca aggtggaaag gcccagcacc ctccgtcagg agcagcgtcc 780
tcttcccaac gtgagcaccg aacgtgagag accccagcct gtccaggcct tcagcagtgc 840
actgcacgag gctgccccct cccagctcga ggggaagctg ccatctcctg atgtcaggca 900
ggacgatggg gaagacaccc tgttctcgga acccaagttt gcacaggtca gctcaagtaa 960
tgtcgtcttg aagacgggat ttgattttct ggacaattgg taaaatgtat tagaaaaata 1020
caatgaagaa ccctaaaatg ttttccaaag tggtgtggtg gaggaggata aaaaggccca 1080
ccttttccta tgtattttac tggtttcttg acactctttt cttaatcatc tggaaactgg 1140
tcaatattgc cagatttttt tcttttttgg tagaaccaga tatatatgct attttcagtg 1200
atttgataac agaagttttc catttggaat ttttaaggtc tgttaataat tcaggagatc 1260
```

```
ttgtaaataa aacttctgtt cccagctcca cccaactttc cccctcctca aaggatgtgt 1320

ttcaaccatg tcacaaaaat catataagtg atttccatct ccttctccat tattccccct 1380

cccccctccg ctttttaccg tatgggttcc ttttggtggg tgattgaggg tgatgttatc 1440

agccatgaca tcagcatgct ggctgtgacc ccggaaagac tggcccccag cgacgttctc 1500

agccagcgct cgcagctgtc cggggcttct ctggcagaag ccatgtctct cacatcatgt 1560

gccagcctcc accctcacgc catttccagg gaacagactg cgggtatgta gcagtgtagt 1620

ctttaacctg ctctgataca tattcagagt atggattgtt gtttaaaaag agttgcatgt 1680

ttaaagagtt ttgtactagc ttttcattat tttgtatcta gattatcaac aatggggcta 1740

ccactttcct tggttttata tccatttcct cttggaagtt cttgttgctt atgtgacctg 1800

ttggttgttc cccggactgg gcacctacag gagtcagggc agacggcaga tgtggctgga 1860

ggtcagggct cttctgctta gttgtgttag agtcttccag catgggactg atgggagcag 1920

tgggcattct ttatcccaag ggctagccag gttgcgtcat gacggacctt ccccagccct 1980

gaccaccacc agaagtggaa gagtggagtt tgcggtcaac tcagcagtgc ccatggagac 2040

ctgcgtggtg tcagagcagc agtatctctt ggagctggtg cagacaccaa ggctgcccag 2100

tggtacaacg tggtccacct cccctaggga agctgctgca ctcagaggct gtcctgccca 2160

gtggcccctg agccgtgtga gcctgcagga ggcgtctgag cagagcctca agcccggtat 2220

ggcgccatct ccatgttgcc atcactgcgt tctcacctga agccttaatc tttgcgacac 2280

ctgccagtga gcgctcggtt tcaataccaa agtgtgtctt cttctttttt ttttttttaa 2340

atgcctgttt cataggacct tctgaaatga tttccagaat attttatctg gctccaaaat 2400

aaagcacata gcaactcacc tcaacccctc atcatctcca ggaaagtttc tgccaaagct 2460

gtggcatagc caacttttga tttggttctt gccaattgtt ttatgtccct aaacctcatt 2520

tggatccttg gggtatagtt ttatctttct gcttcagtga tttactgtaa cttttcaaat 2580

attggttctt tctgtaccat ttaagtatag ttgatatatg tgaggcaaaa aaaggtttca 2640

gcatggtggt gagggaaaaa ggagcttaga aatcccagtt ggcacagcct gggcaagcgc 2700

cagctcccct cagggctaac ggcactgttc acacagggat cctcagaatc agcggccacc 2760

tgcctccacc ttctgcctgg agggcatggg gctgttgtag aacctatggt agcaaatgta 2820

tatgtatgag tttgtattct gtagtgttgg tgtagcacag aagaaagacc tgtgtcctag 2880

agagtaggcc aaggtgatct gcctcttcta ttgggagaaa ttctaatttc tttcccactt 2940

tctcaacaag cccaatattc cctccaagtt cttcttggtg ctgagggctg taggaattat 3000

tgaaagcttc tgcctcactt agtatcgtct ggggcccagc acccagcaat aactctaata 3060

atgtttctta atggtatagc ctcctgagat taaatgtaaa atcaaaaatt aggaaatctt 3120

ggagggagtc ctcaagttgt attgctttgc tgtgcttttg gaagaaggga cgacctggag 3180

gacacaggct cctgtgtggg tcttcatcct gcctgaccgg cagatcttcc tctacacctt 3240

gggcaaagtc tatgcgaaga tggtttctta gctctccatt tgccatgatt ttcctcccat 3300

tcatcatgag ggagtttctc aaaccaggag tttatattta ttttttagaa aatacacact 3360

tttcaggaga aacctgagca tgattttgga ttctccacct ccccccagtc tctgcacctg 3420
```

```
ggattcagct caaggattca gtgtcttcat ttttacaaaa gttcccccaa gaaatcagca 3480
accagcctct gtttcatctg ggagcccctc ccttggcccc ctgggtttgg gggtgctgcc 3540
ctactgggaa cagcgggggt ctgtcacccg tctgagccgc accccctgt gtggatttca 3600
ggaagagcct cccttctttt gcgtctccct ttctttaatt aacattttca aaagtaataa 3660
attcttactg acgacttgta acttagtcat attttatact tgtagccttt aataaagcca 3720
tttaaaaaat gct                                                   3733
```

<210> 49
<211> 327
<212> PRT
<213> Homo sapiens

<400> 49

```
Met Ala Ser Met Ala Ala Ala Ile Ala Ala Ser Arg Ser Ala Val Met
 1               5                  10                  15
Ser Gly Asn Arg Pro Leu Asp Asp Arg Glu Arg Lys Arg Phe Thr Tyr
                20                  25                  30
Phe Ser Ser Leu Ser Pro Met Ala Arg Lys Ile Met Gln Asp Lys Glu
            35                  40                  45
Lys Ile Arg Glu Lys Tyr Gly Pro Glu Trp Ala Arg Leu Pro Pro Ala
        50                  55                  60
Gln Gln Asp Glu Ile Ile Asp Arg Cys Leu Val Gly Pro Arg Ala Pro
65                  70                  75                  80
Ala Pro Arg Asp Pro Gly Asp Ser Glu Glu Leu Thr Arg Phe Pro Gly
                85                  90                  95
Leu Arg Gly Pro Thr Gly Gln Lys Val Val Arg Phe Gly Asp Glu Asp
                100                 105                 110
Leu Thr Trp Gln Asp Glu His Ser Ala Pro Phe Ser Trp Glu Thr Lys
            115                 120                 125
Ser Gln Met Glu Phe Ser Ile Ser Ala Leu Ser Ile Gln Glu Pro Ser
            130                 135                 140
Asn Gly Thr Ala Ala Ser Glu Pro Arg Pro Leu Ser Lys Ala Ser Gln
145                 150                 155                 160
Gly Ser Gln Ala Leu Lys Ser Ser Gln Gly Ser Arg Ser Ser Ser Leu
                165                 170                 175
```

Asp Ala Leu Gly Pro Thr Arg Lys Glu Glu Glu Ala Ser Phe Trp Lys
            180   185   190

Ile Asn Ala Glu Arg Ser Arg Gly Glu Gly Pro Glu Ala Glu Phe Gln
            195   200   205

Ser Leu Thr Pro Ser Gln Ile Lys Ser Met Glu Lys Gly Glu Lys Val
        210   215   220

Leu Pro Pro Cys Tyr Arg Gln Glu Pro Ala Pro Lys Asp Arg Glu Ala
225   230   235   240

Lys Val Glu Arg Pro Ser Thr Leu Arg Gln Glu Gln Arg Pro Leu Pro
            245   250   255

Asn Val Ser Thr Glu Arg Glu Arg Pro Gln Pro Val Gln Ala Phe Ser
            260   265   270

Ser Ala Leu His Glu Ala Ala Pro Ser Gln Leu Glu Gly Lys Leu Pro
            275   280   285

Ser Pro Asp Val Arg Gln Asp Asp Gly Glu Asp Thr Leu Phe Ser Glu
        290   295   300

Pro Lys Phe Ala Gln Val Ser Ser Ser Asn Val Val Leu Lys Thr Gly
305   310   315   320

Phe Asp Phe Leu Asp Asn Trp
            325

<210> 50
<211> 1881
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (141)..(1214)

<400> 50
ttttgatgag cgggatcttc aatattcatg ttattttctc ctttggtctt atatgattgt 60
tacctttatg aagctttagt gattacaaag cacttttttt gtccattttt acctgagctt 120
tgtaaactct gatttgcagg atggctggct gtggtgaaat tgatcattca ataaacatgc 180
ttcctacaaa caggaaagcg aacgagtcct gttctaatac tgcaccttct ttaaccgtcc 240

```
ctgaatgtgc catttgtctg caaacatgtg ttcatccagt cagtctgccc tgtaagcacg 300
ttttctgcta tctatgtgta aaaggagctt catggcttgg aaagcggtgt gctcttcgtc 360
gacaagaaat tcccgaggat ttccttgaca agccaacctt gttgtcacca gaagaactca 420
aggcagcaag tagaggaaat ggtgaatatg catggtatta tgaaggaaga aatgggtggt 480
ggcagtacga tgagcgcact agtagagagc tggaagatgc tttttccaaa ggtaaaaaga 540
acactgaaat gttaattgct ggctttctgt atgtcgctga tcttgaaaac atggttcaat 600
ataggagaaa tgaacatgga cgtcgcagga agattaagcg agatataata gatataccaa 660
agaagggagt agctggactt aggctagact gtgatgctaa taccgtaaac ctagcaagag 720
agagctctgc tgacggagcg gacagtgtat cagcacagag tggagcttct gttcagcccc 780
tagtgtcttc tgtaaggccc ctaacatcag tagatggtca gtcaacaagc cctgcaacac 840
catcccctga tgcaagcact tctctggaag actcttttgc tcatttacaa ctcagtggag 900
acaacacagc tgaaaggagt cataggggag aaggagaaga agatcatgaa tcaccatctt 960
caggcagggt accagcacca gacacctcca ttgaagaaac tgaatcagat gccagtagtg 1020
atagtgagga tgtatctgca gttgttgcac agcactcctt gacccaacag agacttttgg 1080
tttctaatgc aaaccagaca gtacccgatc gatcagatcg attgggaact gatcgatcag 1140
tagcaggggg tggaacagtg agtgtcagtg tcagatctag aaggcctgat ggacagtgca 1200
cagtaactga agtttaaata aaaatgtctt cagctccatg ctcaaggttg aaagggttac 1260
ctgtaaattt ctgcccacat aacattatac tcatccctag tagtgcattt tgggagttgg 1320
ggtgggaagg ggtatgggaa ggatagactc ataattaaaa tgtctaacat gtctctgttg 1380
agaaatttat ttaatgtaag gaacttgggt gttaatagtt gagagctgtt tagtaataac 1440
ccagttttct tgaggtctgt ttactttata cttttaaaa acttctgtag ttcttttggc 1500
cagtgtgttt gtattatctg tgcattaatg gtcctcatct gactcctgca ttgtgtctta 1560
ttttctgca tggattggca taagaccatt actaaaattt ggcacctgtg agatgtttga 1620
tattatgaac aggaaacata atttaatgta tgaatagatg tgaatttggg atttcaaaat 1680
agatgaataa caactatttt atagtaaagt tattgaaatg gaaatgaaaa cagccagtaa 1740
cttatgtttc agaatgtttg taacacactt catggtgttc ccataggctt tgctgtctag 1800
tcttatagtt tgaggttttt ttggtctgca tttttctttt tgattacaaa atttataatt 1860
taataaatac tagagtttat c                                         1881
```

<210> 51
<211> 358
<212> PRT
<213> Homo sapiens

<400> 51

```
Met Ala Gly Cys Gly Glu Ile Asp His Ser Ile Asn Met Leu Pro Thr
 1               5                   10                  15
Asn Arg Lys Ala Asn Glu Ser Cys Ser Asn Thr Ala Pro Ser Leu Thr
            20                  25                  30
Val Pro Glu Cys Ala Ile Cys Leu Gln Thr Cys Val His Pro Val Ser
        35                  40                  45
Leu Pro Cys Lys His Val Phe Cys Tyr Leu Cys Val Lys Gly Ala Ser
     50                  55                  60
Trp Leu Gly Lys Arg Cys Ala Leu Arg Arg Gln Glu Ile Pro Glu Asp
 65             70                  75                      80
Phe Leu Asp Lys Pro Thr Leu Leu Ser Pro Glu Glu Leu Lys Ala Ala
            85                  90                  95
Ser Arg Gly Asn Gly Glu Tyr Ala Trp Tyr Tyr Glu Gly Arg Asn Gly
            100                 105                 110
Trp Trp Gln Tyr Asp Glu Arg Thr Ser Arg Glu Leu Glu Asp Ala Phe
        115                 120                 125
Ser Lys Gly Lys Lys Asn Thr Glu Met Leu Ile Ala Gly Phe Leu Tyr
    130                 135                 140
Val Ala Asp Leu Glu Asn Met Val Gln Tyr Arg Arg Asn Glu His Gly
145                 150                 155                 160
Arg Arg Arg Lys Ile Lys Arg Asp Ile Ile Asp Ile Pro Lys Lys Gly
            165                 170                 175
Val Ala Gly Leu Arg Leu Asp Cys Asp Ala Asn Thr Val Asn Leu Ala
            180                 185                 190
Arg Glu Ser Ser Ala Asp Gly Ala Asp Ser Val Ser Ala Gln Ser Gly
        195                 200                 205
Ala Ser Val Gln Pro Leu Val Ser Ser Val Arg Pro Leu Thr Ser Val
    210                 215                 220
Asp Gly Gln Ser Thr Ser Pro Ala Thr Pro Ser Pro Asp Ala Ser Thr
225                 230                 235                 240
Ser Leu Glu Asp Ser Phe Ala His Leu Gln Leu Ser Gly Asp Asn Thr
            245                 250                 255
Ala Glu Arg Ser His Arg Gly Glu Gly Glu Glu Asp His Glu Ser Pro
            260                 265                 270
Ser Ser Gly Arg Val Pro Ala Pro Asp Thr Ser Ile Glu Glu Thr Glu
            275                 280                 285
```

```
Ser Asp Ala Ser Ser Asp Ser Glu Asp Val Ser Ala Val Val Ala Gln
        290                 295                 300
His Ser Leu Thr Gln Gln Arg Leu Leu Val Ser Asn Ala Asn Gln Thr
305                 310                 315                 320
Val Pro Asp Arg Ser Asp Arg Leu Gly Thr Asp Arg Ser Val Ala Gly
                325                 330                 335
Gly Gly Thr Val Ser Val Ser Val Arg Ser Arg Arg Pro Asp Gly Gln
                340                 345                 350
Cys Thr Val Thr Glu Val
        355
```

<210> 52
<211> 1824
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (208)..(1824)

<400> 52

```
gtgatccggg gagacaggaa cacgggcaag acagcgctgt ggcaccgcct gcagggccgg 60
ccgttcgtgg aggagtacat ccccacacag gagatccagg tcaccagcat ccactggagc 120
tacaagacca cggatgacat cgtgaaggtt gaagtctggg atgtagtaga caaaggaaaa 180
tgcaaaaagc gaggcgacgg cttaaagatg gagaacgacc cccaggaggc ggagtctgaa 240
atggccctgg atgctgagtt cctggacgtg tacaagaact gcaacggggt ggtcatgatg 300
ttcgacatta ccaagcagtg gaccttcaat tacattctcc gggagcttcc aaaagtgccc 360
acccacgtgc cagtgtgcgt gctggggaac taccgggaca tggcgagca ccgagtcatc 420
ctgccggacg acgtgcgtga cttcatcgac aacctggaca gacctccagg ttcctcctac 480
ttccgctatg ctgagtcttc catgaagaac agcttcggcc taaagtacct tcataagttc 540
ttcaatatcc catctttgca gcttcagagg gagacgctgt tgcggcagct ggagacgaac 600
cagctggaca tggacgccac gctggaggag ctgtcggtgc agcaggagac ggaggaccag 660
aactacggca tcttcctgga tgatggag gctcgcagcc gtggccatgc gtccccactg 720
gcggctaacg gcagagccc atccccgggc tcccagtcac cagtggtgcc tgcaggcgct 780
gtgtccacgg ggagctccag ccccggcaca ccccagcccg ccccacagct gcccctcaat 840
```

gctgccccac catcctctgt gccccctgta ccaccctcag aggccctgcc cccacctgcg 900

tgcccctcag cccccgcccc acggcgcagc atcatctcta ggctgtttgg gacgtcacct 960

gccaccgagg cagcccctcc acctccagag ccagtcccgg ccgcacaggg cccagcaacg 1020

gtccagagtg tggaggactt tgttcctgac gaccgcctgg accgcagctt cctggaagac 1080

acaacccccg ccagggacga gaagaaggtg ggggccaagg ctgcccagca ggacagcgac 1140

agtgatgggg aggccctggg cggcaacccg atggtggcag ggttccagga cgatgtggac 1200

ctcgaagacc agccacgtgg gagtcccccg ctgcctgcag gccccgtccc cagtcaagac 1260

atcactcttt cgagtgagga ggaagcagaa gtggcagctc ccacaaaagg ccctgcccca 1320

gctccccagc agtgctcaga gccagagacc aagtggtcct ccataccagc ttcgaagcca 1380

cggaggggga cagctcccac gaggaccgca gcacccccct ggccaggcgg tgtctctgtt 1440

cgcacaggtc cggagaagcg cagcagcacc aggccccctg ctgagatgga gccggggaag 1500

ggtgagcagg cctcctcgtc ggagagtgac cccgagggac ccattgctgc acaaatgctg 1560

tccttcgtca tggatgaccc cgactttgag agcgagggat cagacacaca gcgcagggcg 1620

gatgactttc ccgtgcgaga tgacccctcc gatgtgactg acgaggatga gggccctgcc 1680

gagccgcccc caccccccaa gctccctctc cccgccttca gactgaagaa tgactcggac 1740

ctcttcgggc tggggctgga ggaggccgga cccaaggaga gcagtgagga aggtaaggag 1800

ggcaaaaccc cctctaagga gaag 1824

<210> 53

<211> 539

<212> PRT

<213> Homo sapiens

<400> 53

Met Glu Asn Asp Pro Gln Glu Ala Glu Ser Glu Met Ala Leu Asp Ala
1   5   10   15

Glu Phe Leu Asp Val Tyr Lys Asn Cys Asn Gly Val Val Met Met Phe
                20   25   30

Asp Ile Thr Lys Gln Trp Thr Phe Asn Tyr Ile Leu Arg Glu Leu Pro
            35   40   45

Lys Val Pro Thr His Val Pro Val Cys Val Leu Gly Asn Tyr Arg Asp
        50   55   60

Met Gly Glu His Arg Val Ile Leu Pro Asp Asp Val Arg Asp Phe Ile
65   70   75   80

Asp Asn Leu Asp Arg Pro Pro Gly Ser Ser Tyr Phe Arg Tyr Ala Glu

```
                      85                      90                      95
Ser Ser Met Lys Asn Ser Phe Gly Leu Lys Tyr Leu His Lys Phe Phe
            100                     105                     110
Asn Ile Pro Ser Leu Gln Leu Gln Arg Glu Thr Leu Leu Arg Gln Leu
            115                     120                     125
Glu Thr Asn Gln Leu Asp Met Asp Ala Thr Leu Glu Glu Leu Ser Val.
            130                     135                     140
Gln Gln Glu Thr Glu Asp Gln Asn Tyr Gly Ile Phe Leu Glu Met Met
145                     150                     155                     160
Glu Ala Arg Ser Arg Gly His Ala Ser Pro Leu Ala Ala Asn Gly Gln
            165                     170                     175
Ser Pro Ser Pro Gly Ser Gln Ser Pro Val Val Pro Ala Gly Ala Val
            180                     185                     190
Ser Thr Gly Ser Ser Ser Pro Gly Thr Pro Gln Pro Ala Pro Gln Leu
            195                     200                     205
Pro Leu Asn Ala Ala Pro Pro Ser Ser Val Pro Pro Val Pro Pro Ser
            210                     215                     220
Glu Ala Leu Pro Pro Pro Ala Cys Pro Ser Ala Pro Ala Pro Arg Arg
225                     230                     235                     240
Ser Ile Ile Ser Arg Leu Phe Gly Thr Ser Pro Ala Thr Glu Ala Ala
            245                     250                     255
Pro Pro Pro Pro Glu Pro Val Pro Ala Ala Gln Gly Pro Ala Thr Val
            260                     265                     270
Gln Ser Val Glu Asp Phe Val Pro Asp Asp Arg Leu Asp Arg Ser Phe
            275                     280                     285
Leu Glu Asp Thr Thr Pro Ala Arg Asp Glu Lys Lys Val Gly Ala Lys
            290                     295                     300
Ala Ala Gln Gln Asp Ser Asp Ser Asp Gly Glu Ala Leu Gly Gly Asn
305                     310                     315                     320
Pro Met Val Ala Gly Phe Gln Asp Asp Val Asp Leu Glu Asp Gln Pro
            325                     330                     335
Arg Gly Ser Pro Pro Leu Pro Ala Gly Pro Val Pro Ser Gln Asp Ile
            340                     345                     350
Thr Leu Ser Ser Glu Glu Glu Ala Glu Val Ala Ala Pro Thr Lys Gly
            355                     360                     365
Pro Ala Pro Ala Pro Gln Gln Cys Ser Glu Pro Glu Thr Lys Trp Ser
```

```
              370                  375                  380
Ser Ile Pro Ala Ser Lys Pro Arg Arg Gly Thr Ala Pro Thr Arg Thr
385                  390                  395                  400
Ala Ala Pro Pro Trp Pro Gly Gly Val Ser Val Arg Thr Gly Pro Glu
                    405                  410                  415
Lys Arg Ser Ser Thr Arg Pro Pro Ala Glu Met Glu Pro Gly Lys Gly
                    420                  425                  430
Glu Gln Ala Ser Ser Ser Glu Ser Asp Pro Glu Gly Pro Ile Ala Ala
                435                  440                  445
Gln Met Leu Ser Phe Val Met Asp Asp Pro Asp Phe Glu Ser Glu Gly
                450                  455                  460
Ser Asp Thr Gln Arg Arg Ala Asp Asp Phe Pro Val Arg Asp Asp Pro
465                  470                  475                  480
Ser Asp Val Thr Asp Glu Asp Glu Gly Pro Ala Glu Pro Pro Pro Pro
                    485                  490                  495
Pro Lys Leu Pro Leu Pro Ala Phe Arg Leu Lys Asn Asp Ser Asp Leu
                    500                  505                  510
Phe Gly Leu Gly Leu Glu Glu Ala Gly Pro Lys Glu Ser Ser Glu Glu
                515                  520                  525
Gly Lys Glu Gly Lys Thr Pro Ser Lys Glu Lys
                530                  535
```

```
<210> 54
<211> 1518
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (8)..(1432)

<400> 54
gtatgctatg gatgcctttg taggacctat ttggagcatg gctgccagcc ccagtggctc 60
tcaacttttg gttggttgtg aagatggatc tgtgaaacta tttcaaatta ccccagacaa 120
aatccagttt gaaagaaatt ttgatcggca gaaaagtcgc atcctgagtc tcagctggca 180
```

```
tccctctggt acccacattg cagctggttc catagactac attagtgtgt ttgatgtcaa 240
atcaggcagc gctgttcata agatgattgt ggacaggcag tatatgggcg tgtctaagcg 300
gaagtgcatc gtgtggggtg tcgccttctt gtccgatggc actatcataa gtgtggactc 360
tgctgggaag gtgcagttct gggactcagc cactgggacg cttgtgaaga gccatctcat 420
cgctaatgct gacgtgcagt ccattgctgt agctgaccaa gaagacagtt tcgtggtggg 480
cacagccgag ggaacagtct tccattttca gctggtccct gtgacatcta acagcagtga 540
gaagcagtgg gtgcggacaa aaccgttcca gcatcacact catgacgtgc gcactgtggc 600
ccacagccca acagcgctga tatctggagg cactgacacc cacttagtct ttcgtcctct 660
catggagaag gtggaagtaa agaattacga tgccgctctc cgaaaaatca cctttcccca 720
ccgatgtctc atctcctgtt ctaaaaagag gcagcttctc ctcttccagt ttgctcatca 780
cttagaactt tggcgactgg gatccacagt tgcaacagga acagtggagg ccatgtgtct 840
tttggcagtc agtccagatg ggaattggct agctgcatca ggtaccagtg ctggagtcca 900
tgtctacaac gtaaaacagc taaagcttca ctgcacggtg cctgcttaca atttcccagt 960
gactgctatg gctattgccc ccaataccaa caaccttgtc atcgctcatt cggaccagca 1020
ggtatttgag tacagcatcc cagacaaaca gtatacagat tggagccgga ctgtccagaa 1080
gcagggcttt caccaccttt ggctccaaag ggatactcct atcacacaca tcagtttca 1140
tcccaagaga ccgatgcaca tccttctcca tgatgcctac atgttctgca tcattgacaa 1200
gtcattgccc cttccaaatg acaaaacctt actctacaat ccatttcctc ccacgaatga 1260
atcagatgtc atccggaggc gcacagctca tgctttttaaa atttctaaga tatataagcc 1320
tctactcttc atggatcttt tggatgaaag aacactcgtg gcagtagaac ggcctctgga 1380
tgacatcatt gctcagctcc caccacccat taaaaagaag aaatttggaa cctaaaacag 1440
ggcactgtct gtgtccttcc ttgaactgtc taccctgttg cttttcacaa atcatggtaa 1500
taaaacaagt tattcttg                                              1518
```

<210> 55

<211> 475

<212> PRT

<213> Homo sapiens

<400> 55

```
Met Asp Ala Phe Val Gly Pro Ile Trp Ser Met Ala Ala Ser Pro Ser
 1               5                   10                  15
Gly Ser Gln Leu Leu Val Gly Cys Glu Asp Gly Ser Val Lys Leu Phe
            20                  25                  30
Gln Ile Thr Pro Asp Lys Ile Gln Phe Glu Arg Asn Phe Asp Arg Gln
```

```
              35                      40                      45
Lys Ser Arg Ile Leu Ser Leu Ser Trp His Pro Ser Gly Thr His Ile
      50                      55                      60
Ala Ala Gly Ser Ile Asp Tyr Ile Ser Val Phe Asp Val Lys Ser Gly
 65                      70                      75                      80
Ser Ala Val His Lys Met Ile Val Asp Arg Gln Tyr Met Gly Val Ser
                  85                      90                      95
Lys Arg Lys Cys Ile Val Trp Gly Val Ala Phe Leu Ser Asp Gly Thr
                 100                     105                    ·110
Ile Ile Ser Val Asp Ser Ala Gly Lys Val Gln Phe Trp Asp Ser Ala
             115                     120                     125
Thr Gly Thr Leu Val Lys Ser His Leu Ile Ala Asn Ala Asp Val Gln
         130                     135                     140
Ser Ile Ala Val Ala Asp Gln Glu Asp Ser Phe Val Val Gly Thr Ala
145                     150                     155                     160
Glu Gly Thr Val Phe His Phe Gln Leu Val Pro Val Thr Ser Asn Ser
                 165                     170                     175
Ser Glu Lys Gln Trp Val Arg Thr Lys Pro Phe Gln His His Thr His
                 180                     185                     190
Asp Val Arg Thr Val Ala His Ser Pro Thr Ala Leu Ile Ser Gly Gly
             195                     200                     205
Thr Asp Thr His Leu Val Phe Arg Pro Leu Met Glu Lys Val Glu Val
         210                     215                     220
Lys Asn Tyr Asp Ala Ala Leu Arg Lys Ile Thr Phe Pro His Arg Cys
225                     230                     235                     240
Leu Ile Ser Cys Ser Lys Lys Arg Gln Leu Leu Leu Phe Gln Phe Ala
                 245                     250                     255
His His Leu Glu Leu Trp Arg Leu Gly Ser Thr Val Ala Thr Gly Thr
                 260                     265                     270
Val Glu Ala Met Cys Leu Leu Ala Val Ser Pro Asp Gly Asn Trp Leu
         275                     280                     285
Ala Ala Ser Gly Thr Ser Ala Gly Val His Val Tyr Asn Val Lys Gln
         290                     295                     300
Leu Lys Leu His Cys Thr Val Pro Ala Tyr Asn Phe Pro Val Thr Ala
305                     310                     315                     320
Met Ala Ile Ala Pro Asn Thr Asn Asn Leu Val Ile Ala His Ser Asp
```

```
                325                      330                      335
Gln Gln Val Phe Glu Tyr Ser Ile Pro Asp Lys Gln Tyr Thr Asp Trp
                    340                      345                      350
Ser Arg Thr Val Gln Lys Gln Gly Phe His His Leu Trp Leu Gln Arg
                    355                      360                      365
Asp Thr Pro Ile Thr His Ile Ser Phe His Pro Lys Arg Pro Met His
                370                      375                      380
Ile Leu Leu His Asp Ala Tyr Met Phe Cys Ile Ile Asp Lys Ser Leu
385                      390                      395                      400
Pro Leu Pro Asn Asp Lys Thr Leu Leu Tyr Asn Pro Phe Pro Pro Thr
                    405                      410                      415
Asn Glu Ser Asp Val Ile Arg Arg Arg Thr Ala His Ala Phe Lys Ile
                    420                      425                      430
Ser Lys Ile Tyr Lys Pro Leu Leu Phe Met Asp Leu Leu Asp Glu Arg
                    435                      440                      445
Thr Leu Val Ala Val Glu Arg Pro Leu Asp Asp Ile Ile Ala Gln Leu
                450                      455                      460
Pro Pro Pro Ile Lys Lys Lys Lys Phe Gly Thr
465                      470                      475
```

<210> 56
<211> 2176
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (26)..(709)

<400> 56

```
cgcggcttct ggcgcggagg cgccgatgca gccgggcttc cccgagaacc tgagcaagct  60
gaagagcctc ctgacccagc tccgcgccga ggacttgaac atcgccccgc gcaaggccac 120
actgcagccg ctgccgccca acctgccgcc agtcacctac atgcacatct acgagacgga 180
cggcttcagc ctgggcgtgt tcctgctcaa gagcggcacg tccatcccgc tgcacgacca 240
cccgggcatg cacggcatgc tcaaggtgct gtacggcacc gtgcgcatca gctgcatgga 300
```

```
caagctagac gcgggcggcg ggcaacggcc gcgggccttg ccgcccgagc agcagttcga 360
gccgccgctg cagcccaggg agcgagaagc cgtgcggccg ggcgtgctgc gttcgcgggc 420
cgagtacacc gaggccagcg gcccctgcat cctcacaccg caccgggaca acctgcacca 480
gatcgacgcc gtggaagggc ctgccgcctt cctggacatc ctggccccgc cctacgaccc 540
ggacgatggc cgggactgcc actattaccg ggtgctggag ccggtcaggc ccaaggaggc 600
ctccagctcg gcctgtgacc tgcctcgaga ggtgtggctc ctggagaccc cacaggccga 660
tgacttctgg tgcgagggag aaccctatcc aggtcccaag gtcttccctt gaagccactg 720
gcgcccagga gcggtgggcc gaagacgtgc cctaccctac cacaagggct gtgtctctac 780
cccctagcct gggcgttgga tctactggaa tgagcagcag ccgcttcctc ggcagccttg 840
ggaagcacgg gcgactggac agcagccgcc gggcacggtt atggggcgg ggtgggcggg 900
gaggctagat tgtttcctgg tactgtcact gccactgggg ctttgatttg gaggaatggg 960
gcaggggact atctgaagcg cttccatcct aaagccataa tgaaaatatc ttcctctctt 1020
ccccattcta tacaaaatac taagtggttt tcttgctccc actccctacc ccttagttaa 1080
atagggttta ttttccactc atgcccttat gccttttttt cttatagttt tttaacttat 1140
tgactgtgca tgacccagtg gtttgaattg tttttagttc aagtcattgg taaaaactag 1200
gtttaaggag atgagctact gtttaaagtg agctggcctg cctaattaat tccttgtgaa 1260
aactaaatga tttttttcagt ttggggatca ttctcacaac ataactatgc atgtagagga 1320
caagatttat tttctttcct ccctttgccc agtagccaca tctggtttac tcaggcagca 1380
tctactaaga aattcagcac ctgcatatct ctgtgacatg gtcacttaga gcttatcttc 1440
cctatgaatc tccagatctg tgagtcgagc agatttcatg ttgcagattc acctttaatg 1500
caaagactgt attatcctca catgactttt tttcttgtct tactgtacct taaaaggtga 1560
tagagtaatt ctgtattttc taacgggaag attcaaagga gctgaatgtg ttatgcttcc 1620
aaacaactga atgtaaaaca ctcctagcca gttgttgcat tccctatatt tatttacttc 1680
caatatttta ctgtaaaagt agggagaaat attatgttga tagttgtttc atattctctc 1740
aggaacttta atgttcccga ctcgggtgat tccagctgtg ttgctggcag tgttgtctca 1800
accctctccc taaaatgact gagccctggg ttcatctaat gtggtttttcc ttaggaagag 1860
atagaaggca cagaagatca cagctagaga attgagaatt aactatacta ctagccattt 1920
tagggcacca aaacttggga ttaaacactt cctacttccc actcccaact cctgaaatga 1980
agtcttgcta tctgtgacta gttttatttt tgtgctttta atagtccgag cagtcttacc 2040
ttgtttacac atgtattgac accatttgct tcaggccatg gagcactgtt tctcccttttt 2100
tactatttat aggattccgt tttttcacaa gactttttaat aaaaagaaat tgtagaaata 2160
aacacattaa aatttg                                              2176
```

<210> 57
<211> 228

<212> PRT

<213> Homo sapiens

<400> 57

```
Met Gln Pro Gly Phe Pro Glu Asn Leu Ser Lys Leu Lys Ser Leu Leu
 1               5                   10                  15
Thr Gln Leu Arg Ala Glu Asp Leu Asn Ile Ala Pro Arg Lys Ala Thr
                20                  25                  30
Leu Gln Pro Leu Pro Pro Asn Leu Pro Pro Val Thr Tyr Met His Ile
            35                  40                  45
Tyr Glu Thr Asp Gly Phe Ser Leu Gly Val Phe Leu Leu Lys Ser Gly
        50                  55                  60
Thr Ser Ile Pro Leu His Asp His Pro Gly Met His Gly Met Leu Lys
65                  70                  75                  80
Val Leu Tyr Gly Thr Val Arg Ile Ser Cys Met Asp Lys Leu Asp Ala
                85                  90                  95
Gly Gly Gly Gln Arg Pro Arg Ala Leu Pro Pro Glu Gln Gln Phe Glu
                100                 105                 110
Pro Pro Leu Gln Pro Arg Glu Arg Glu Ala Val Arg Pro Gly Val Leu
            115                 120                 125
Arg Ser Arg Ala Glu Tyr Thr Glu Ala Ser Gly Pro Cys Ile Leu Thr
        130                 135                 140
Pro His Arg Asp Asn Leu His Gln Ile Asp Ala Val Glu Gly Pro Ala
145                 150                 155                 160
Ala Phe Leu Asp Ile Leu Ala Pro Pro Tyr Asp Pro Asp Asp Gly Arg
                165                 170                 175
Asp Cys His Tyr Tyr Arg Val Leu Glu Pro Val Arg Pro Lys Glu Ala
                180                 185                 190
Ser Ser Ser Ala Cys Asp Leu Pro Arg Glu Val Trp Leu Leu Glu Thr
            195                 200                 205
Pro Gln Ala Asp Asp Phe Trp Cys Glu Gly Glu Pro Tyr Pro Gly Pro
            210                 215                 220
Lys Val Phe Pro
225
```

<210> 58
<211> 2661
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (6)..(2045)

<400> 58

```
tttgtatgag aggagacatg tgtccttttg atcatggaag tgatccagta gttgtagaag 60
atgtgaatct tcctggtatg ctgcctttcc cagcacagcc tcctgttgtt gaaggaccac 120
ctcctcctgg actccccca cctccaccaa ttcttacacc cccacctgtg aatctcaggc 180
ccccagtacc accgccaggt ccattgccac ccagtctccc acctgttaca ggaccaccac 240
ctccacttcc tcctttgcag ccatctggca tggatgctcc tccaaactct gcaaccagtt 300
ctgttcctac tgtagtaaca actggcattc atcaccagcc tcctcctgct ccaccctctc 360
tttttactgc agatacatat gacacagatg gctacaatcc tgaagcccca agcataacaa 420
acacttccag acctatgtat agacacagag tgcatgcaca aaggcccaac ttgataggac 480
taacatcagg ggatatggat ttgccaccca gagaaaagcc tcccaataaa agcagtatga 540
ggatagtagt ggactcagaa tcaaggaaaa gaaccattgg ttctggagag cctggagttc 600
ctacaaagaa gacttggttt gataaaccaa attttaatag aacaaacagc ccaggctttc 660
agaagaaggt tcaatttgga aatgaaaata ccaagcttga acttagaaaa gttcctccag 720
aattaaataa tatcagcaaa cttaatgaac attttagtcg atttggaacc ttggttaact 780
tacaggttgc ttataatggt gatcctgaag gtgccctaat ccaatttgca acatacgaag 840
aagcaaagaa agcaatatca agtacggaag cagtattaaa caatcgcttt attaaggttt 900
attggcacag agaaggaagc acccaacagt tacaaactac ttctccaaag gtaatgcagc 960
ctttagtcca gcagcccatt ttgcctgttg tgaagcagtc agtcaaagag cggctgggtc 1020
cagtaccttc aagtactatt gaacctgcag aagcccagag tgcctcttca gaccttcctc 1080
aggtgttgtc tacatctact ggcctaacaa aaacagtgta taatccagct gctttgaagg 1140
ctgcacagaa aaccttactt gtttccacct ctgcagttga taataatgaa gcacagaaaa 1200
aaaaacagga ggcattgaaa cttcagcagg atgtaaggaa aaggaaacaa gaaattttag 1260
aaaagcacat tgaaacacag aagatgttaa tttcaaaact ggagaaaaac aaaacaatga 1320
agtctgaaga taaagcagaa ataatgaaaa ctttagaggt tttgacaaaa aatattacca 1380
agttgaaaga tgaggtcaaa gctgcttctc ctggacgctg tcttccaaaa agtataaaaa 1440
ccaagactca gatgcagaag gaattacttg acacagaact ggatttatat aagaagatgc 1500
aggctggaga agaagtcact gaacttagga gaaagtatac agaattacag ctggaagctg 1560
```

```
ccaaacgagg gattctttca tctggtcggg gcagaggaat tcattcaaga ggtcgaggtg 1620
cagttcatgg ccgaggcagg gggcgagggc gagggcgagg tgtgcctggt catgctgtgg 1680
tggatcaccg tcccagggca ttggagattt ctgcatttac ggagagcgat agagaagatc 1740
ttcttcctca ttttgcgcaa tatggtgaaa ttgaagattg tcagattgat gattcctcac 1800
ttcatgcagt aattacattc aagacaagag cagaagctga agcagctgca gttcatggag 1860
ctcgtttcaa agggcaagat ctaaaactgg catggaataa accagtaact aatatttcag 1920
ctgttgaaac agaagaagtt gggcctgatg aagaagaatt tcaggaagag tctttggtgg 1980
atgactcatt acttcaagat gatgatgaag aagaagagga caatgaatct cgttcttgga 2040
gaagatgatt tgactgatca ttgatctgca tatgctagaa ctctacctgt gtttcattag 2100
tattatctaa tgtactttta catatttgta aaaacaattt ttggtaaaat gtgatgaaga 2160
tggatttcac aaatagacaa aaaagaagaa aactaccttc tgatcttgta ttttgaaaga 2220
ttgatgtttg cattttactt cagtaaacaa ttgctaaaga catcacacta gaaacatatg 2280
caatgttttt attacatact tctactggac atcacagaat tctttgggtt ctttgtaatt 2340
taatgaatag gtctgaaaac ttatgaccaa tacttgttat aacttagagg actttgtttt 2400
attccaaata aggaatgaat ttgcatttaa aatcttaatg aatgttttca aaactgaata 2460
gataacatag tactctaact aaagtctcca agttatgtat tataatatta catagtagta 2520
tgcttaggct ttactatgta ttagcctttt gttggactgt gtatgtattt taccataagg 2580
gtttttaatga taatggtgta tgactgcttt acatgagtcc ttatgcatcc agatgttata 2640
ataaagtgga atggtctctt t                                         2661
```

<210> 59
<211> 680
<212> PRT
<213> Homo sapiens

<400> 59

```
Met Arg Gly Asp Met Cys Pro Phe Asp His Gly Ser Asp Pro Val Val
1               5                   10                  15
Val Glu Asp Val Asn Leu Pro Gly Met Leu Pro Phe Pro Ala Gln Pro
            20                  25                  30
Pro Val Val Glu Gly Pro Pro Pro Pro Gly Leu Pro Pro Pro Pro Pro
        35                  40                  45
Ile Leu Thr Pro Pro Pro Val Asn Leu Arg Pro Pro Val Pro Pro Pro
    50                  55                  60
Gly Pro Leu Pro Pro Ser Leu Pro Pro Val Thr Gly Pro Pro Pro Pro
```

```
         65                    70                    75                    80
        Leu Pro Pro Leu Gln Pro Ser Gly Met Asp Ala Pro Pro Asn Ser Ala
                             85                    90                    95
        Thr Ser Ser Val Pro Thr Val Val Thr Thr Gly Ile His His Gln Pro
                        100                   105                   110
        Pro Pro Ala Pro Pro Ser Leu Phe Thr Ala Asp Thr Tyr Asp Thr Asp
                    115                   120                   125
        Gly Tyr Asn Pro Glu Ala Pro Ser Ile Thr Asn Thr Ser Arg Pro Met
                130                   135                   140
        Tyr Arg His Arg Val His Ala Gln Arg Pro Asn Leu Ile Gly Leu Thr
        145                   150                   155                   160
        Ser Gly Asp Met Asp Leu Pro Pro Arg Glu Lys Pro Pro Asn Lys Ser
                        165                   170                   175
        Ser Met Arg Ile Val Val Asp Ser Glu Ser Arg Lys Arg Thr Ile Gly
                        180                   185                   190
        Ser Gly Glu Pro Gly Val Pro Thr Lys Lys Thr Trp Phe Asp Lys Pro
                    195                   200                   205
        Asn Phe Asn Arg Thr Asn Ser Pro Gly Phe Gln Lys Lys Val Gln Phe
            210                   215                   220
        Gly Asn Glu Asn Thr Lys Leu Glu Leu Arg Lys Val Pro Pro Glu Leu
        225                   230                   235                   240
        Asn Asn Ile Ser Lys Leu Asn Glu His Phe Ser Arg Phe Gly Thr Leu
                        245                   250                   255
        Val Asn Leu Gln Val Ala Tyr Asn Gly Asp Pro Glu Gly Ala Leu Ile
                    260                   265                   270
        Gln Phe Ala Thr Tyr Glu Glu Ala Lys Lys Ala Ile Ser Ser Thr Glu
                    275                   280                   285
        Ala Val Leu Asn Asn Arg Phe Ile Lys Val Tyr Trp His Arg Glu Gly
                290                   295                   300
        Ser Thr Gln Gln Leu Gln Thr Thr Ser Pro Lys Val Met Gln Pro Leu
        305                   310                   315                   320
        Val Gln Gln Pro Ile Leu Pro Val Val Lys Gln Ser Val Lys Glu Arg
                        325                   330                   335
        Leu Gly Pro Val Pro Ser Ser Thr Ile Glu Pro Ala Glu Ala Gln Ser
                    340                   345                   350
        Ala Ser Ser Asp Leu Pro Gln Val Leu Ser Thr Ser Thr Gly Leu Thr
```

```
               355                   360                   365
    Lys Thr Val Tyr Asn Pro Ala Ala Leu Lys Ala Ala Gln Lys Thr Leu
        370                   375                   380
    Leu Val Ser Thr Ser Ala Val Asp Asn Asn Glu Ala Gln Lys Lys Lys
    385                   390                   395                   400
    Gln Glu Ala Leu Lys Leu Gln Gln Asp Val Arg Lys Arg Lys Gln Glu
                      405                   410                   415
    Ile Leu Glu Lys His Ile Glu Thr Gln Lys Met Leu Ile Ser Lys Leu
                  420                   425                   430
    Glu Lys Asn Lys Thr Met Lys Ser Glu Asp Lys Ala Glu Ile Met Lys
              435                   440                   445
    Thr Leu Glu Val Leu Thr Lys Asn Ile Thr Lys Leu Lys Asp Glu Val
        450                   455                   460
    Lys Ala Ala Ser Pro Gly Arg Cys Leu Pro Lys Ser Ile Lys Thr Lys
    465                   470                   475                   480
    Thr Gln Met Gln Lys Glu Leu Leu Asp Thr Glu Leu Asp Leu Tyr Lys
                      485                   490                   495
    Lys Met Gln Ala Gly Glu Glu Val Thr Glu Leu Arg Arg Lys Tyr Thr
                  500                   505                   510
    Glu Leu Gln Leu Glu Ala Ala Lys Arg Gly Ile Leu Ser Ser Gly Arg
              515                   520                   525
    Gly Arg Gly Ile His Ser Arg Gly Arg Gly Ala Val His Gly Arg Gly
        530                   535                   540
    Arg Gly Arg Gly Arg Gly Arg Gly Val Pro Gly His Ala Val Val Asp
    545                   550                   555                   560
    His Arg Pro Arg Ala Leu Glu Ile Ser Ala Phe Thr Glu Ser Asp Arg
                      565                   570                   575
    Glu Asp Leu Leu Pro His Phe Ala Gln Tyr Gly Glu Ile Glu Asp Cys
                  580                   585                   590
    Gln Ile Asp Asp Ser Ser Leu His Ala Val Ile Thr Phe Lys Thr Arg
              595                   600                   605
    Ala Glu Ala Glu Ala Ala Ala Val His Gly Ala Arg Phe Lys Gly Gln
        610                   615                   620
    Asp Leu Lys Leu Ala Trp Asn Lys Pro Val Thr Asn Ile Ser Ala Val
    625                   630                   635                   640
    Glu Thr Glu Glu Val Gly Pro Asp Glu Glu Glu Phe Gln Glu Glu Ser
```

```
                    645                 650                 655
        Leu Val Asp Asp Ser Leu Leu Gln Asp Asp Asp Glu Glu Glu Glu Asp
                        660                 665                 670
        Asn Glu Ser Arg Ser Trp Arg Arg
                        675                 680
```

<210> 60
<211> 2005
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (137)..(844)

<400> 60

```
tggatttggt gattctacaa aaaaagacac tgaggttgag accttgaagc atgacactgc  60
tgcagtcgat cgttccgtca agcgtctttt caaagttcgg agtgatcttg attttgctga 120
gcaactgtgg tgcaaaatga gcagtagtgt gatttcatac caagacttgg tgaagtgttt 180
cacattgatc atccagagtc tacaacgtgg tgatatacag ccatggctcc atagtggaag 240
taacagttta ctaagtaagc tcattcatca gtcttatcat ggaaccatgg acacagtttc 300
tctcagtggg actattccag ttcaaatgct tttggaaatt ggtttggaca aactaaagaa 360
agattatatc agtttttttca taggtcagga acttgcatct ttgaatcatt tggaatactt 420
cattgctcca tcagtagata tacaagaaca ggtttatcgt gtccaaaaac tccaccatat 480
tctagaaata ttagtcagtt gcatgccttt cattaaatct caacatgaac tcctcttttc 540
tttaacacag atctgcataa agtattacaa acaaaatcct cttgatgagc aacacatttt 600
tcagctgcca gtcagaccaa ctgctgtaaa gaacttatat caaagtgaga gccacagaa 660
atggagagtg gaaatatata gtggtcaaaa gaagattaag acagtttggc aactgagtga 720
cagctcaccc atagaccatc tgaattttca caaacctgat ttttcggaat taacactaaa 780
cggtagcctg gaagaaagga tattctttac taacatggtt acctgcagcc aggtgcattt 840
caagtgaagt gtgctgatga agtcctctat aagcacaagc caaaaagaga agagaaaaa 900
aaggtaatta ttgtagaacc tgaaaacagc aatgtatgga aaccctcaaa gcagaaaagg 960
gaggaagatc ctgaagattc tcttatgaag ctccaaaatt gataatcctg tctcagctct 1020
gcctcctcag gaggagcatt agtagaacag cagtgatgag gacacagagg gagcagacag 1080
tgggtaccac gatctccgta accatttgca tgtgacttag caagggctct gaaatgacaa 1140
```

```
agagaacgag caccacaaat gagaacagga tcattttagt aaatacagct ttatcccaaa 1200
agctttaact gtattgggaa aacttaaaaa atagcatcct caaattttct gattcttatt 1260
tgccatgaaa tagaacttag taaattaaat gttatttgaa aatgttataa gagctttgta 1320
aatatttcag aaaatatggg ataaatgcct gaatttggtt cttctacagg tgctataata 1380
aagtccatct ctcaatactt atactttcta aattcatctc agaatattag cagccatatt 1440
ccacagttcc tataattttt actgggggggg atttgtgata ggaaagtcct tgggaaacat 1500
ttccaatctt tcaaaatatt attgtgtatc ttaagaagta taggaacttg tatgttgaaa 1560
tgttgtatgg tagttcttgt atagttaaat aataatcttt ttaagagtta atgataagca 1620
tatgttatgt gcattattaa taaaatagtg gccacttagg taatacccac ttttatcttg 1680
tgtgctgggt actctggtta ctgagataaa taaggcactg gacatcctca cgtggagttc 1740
acaggctcat cagtgaattc tgtaccacat ttcaaccttg tttattttag tttaatggaa 1800
tatacattct tagtattgcc tgattattta aatttgttga gggggattgc atgttgcttt 1860
attggcctgt aaaaatagct agtttggtaa gatttggtct cgcaccttcc atctttgcta 1920
ccacattaaa gatgagcttg ttaaaaagga aagcatattt ctctgattgc ccttatggag 1980
aaataaagat aaaattcaaa gaaac                                        2005
```

<210> 61
<211> 236
<212> PRT
<213> Homo sapiens

<400> 61

```
Met Ser Ser Ser Val Ile Ser Tyr Gln Asp Leu Val Lys Cys Phe Thr
1               5                   10                  15
Leu Ile Ile Gln Ser Leu Gln Arg Gly Asp Ile Gln Pro Trp Leu His
                20                  25                  30
Ser Gly Ser Asn Ser Leu Leu Ser Lys Leu Ile His Gln Ser Tyr His
            35                  40                  45
Gly Thr Met Asp Thr Val Ser Leu Ser Gly Thr Ile Pro Val Gln Met
        50                  55                  60
Leu Leu Glu Ile Gly Leu Asp Lys Leu Lys Lys Asp Tyr Ile Ser Phe
65                  70                  75                  80
Phe Ile Gly Gln Glu Leu Ala Ser Leu Asn His Leu Glu Tyr Phe Ile
                85                  90                  95
Ala Pro Ser Val Asp Ile Gln Glu Gln Val Tyr Arg Val Gln Lys Leu
```

```
            100                105                 110
His His Ile Leu Glu Ile Leu Val Ser Cys Met Pro Phe Ile Lys Ser
        115                120                 125
Gln His Glu Leu Leu Phe Ser Leu Thr Gln Ile Cys Ile Lys Tyr Tyr
      130                135              140
Lys Gln Asn Pro Leu Asp Glu Gln His Ile Phe Gln Leu Pro Val Arg
145                150               155                 160
Pro Thr Ala Val Lys Asn Leu Tyr Gln Ser Glu Lys Pro Gln Lys Trp
              165                170                 175
Arg Val Glu Ile Tyr Ser Gly Gln Lys Lys Ile Lys Thr Val Trp Gln
              180                185                 190
Leu Ser Asp Ser Ser Pro Ile Asp His Leu Asn Phe His Lys Pro Asp
          195                200                 205
Phe Ser Glu Leu Thr Leu Asn Gly Ser Leu Glu Glu Arg Ile Phe Phe
        210                215                 220
Thr Asn Met Val Thr Cys Ser Gln Val His Phe Lys
225                230                 235
```

<210> 62
<211> 2279
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (97)..(1650)

<400> 62

```
atgccgacgg actgtgtccg gcgatgggca cgggcatttc ttcgtttata gctgtctgtt 60
tgcattctga ttgggaacac tgggatcatt ttcatcatgc cgacagtggt ggtaatggat 120
gtatcccttt ccatgacccg acctgtgtct attgaggggt ccgaggaata ccagcgtaag 180
cacctagcag cccatggttt aacgatgctg tttgagcaca tggccacaaa ttacaagctt 240
gaatttacag cacttgtggt tttttcatca ctttgggagt tgatggtccc cttcacgaga 300
gattataata ccctacagga agcactaagt aatatggatg attatgacaa aacctgcttg 360
gagtctgcat tagttggtgt ttgcaatatc gttcagcaag aatggggtgg tgcaattcct 420
```

tgccaggttg tcctggtgac agacggctgt cttggcattg gtagagggtc actgcgacat 480

tccctagcca ctcaaaatca acgaagtgag agcaacaggt ttccactacc ttttcctttc 540

ccatctaagt tatatatcat gtgcatggcg aatttggagg agctccagag caccgattcc 600

ttggaatgcc ttgaacgtct catatattta aacaatggtg aagggcagat ttttactatt 660

gatggccccc tgtgcttgaa gaatgtacag tctatgtttg gaaaactgat agatttggca 720

tatacgcctt tccatgctgt tctcaagtgt ggccacctaa ctgctgatgt acaagtcttc 780

cccaggccag aaccttttgt tgtagatgaa gaaattgatc ctatccctaa agtcattaac 840

acagatttgg aaatagtggg atttattgat atagctgata tttcaagtcc cccagttctg 900

tccagacatc tggtcttacc tatagcactt aacaaagaag gtgatgaggt gggtactggc 960

atcactgatg acaatgaaga tgaaaattca gccaatcaga ttgcaggcaa aatacccaac 1020

ttttgtgtcc tgctccatgg tagcctaaaa gtggaaggaa tggtagcgat tgttcaatta 1080

ggtcctgaat ggcatggaat gctctactcc caagctgaca gcaagaagaa atcaaacctc 1140

atgatgtctc tctttgagcc tggcccagaa cctctcccat ggctagggaa aatggcacag 1200

ttgggtccta tttcagatgc taaagaaaac ccttatggcg aggatgacaa taagagtcca 1260

ttccccctgc agcccaaaaa caaacgcagt tatgcccaga atgtgactgt ctggatcaaa 1320

cccagcggcc tgcagacaga tgtacagaag attttaagaa atgcaaggaa actacctgaa 1380

aaaacacaga cattctataa ggagctgaac cgtttgcgaa aggccgctct agcctttggt 1440

ttcctggacc tgctgaaagg ggtggctgac atgctggaaa gggaatgcac actgctgcct 1500

gagacagccc accctgatgc tgcattccag ctgacccatg ctgcccagca gctcaagctg 1560

gccagtaccg gcacctctga gtatgccgct tatgaccaga acatcacacc tttgcacacg 1620

gacttctctg ggagcagcac tgaaagaatt tgaaactgac ttttggagct ttccttcttt 1680

tttcatttca actgaaaatg ctttaggtaa aaacctttcc agtatgttca cctctagaat 1740

agccacccaa agaccttcct gaggctgcct cagaagcacc acttgctgtt ttgaatgact 1800

ctactagtat gagaaggatg tgaaggtggt tggctggttg ggctttaact tcctgggatt 1860

cataattttt aagcttggaa gatagctgct gttccatga tgggcacatt tcctgagaag 1920

cttgaatgac tgatgagcat agagcacccc tgccttcctc aggaaacctg accggcaggg 1980

gctctctggc ttcctgaaag cttcacctct tccctcgttt atatctcaac tgtaagggca 2040

ttttcaagct tctgttcatg gaatgagcaa ctcagactgt ctggagcttg ctgagtacaa 2100

acacaccacc actaagtttc agaactttcc ttagaacttg ggcaaaatgt ggtggtaact 2160

cttaagtgct tttggtatct cttgagattc taacttttaa agagcaacca ttaatgtgta 2220

aaatgattcc tattattcaa ggtttttttt taatgaaaat aaaatatttg attttctag 2279

<210> 63

<211> 518

<212> PRT

<213> Homo sapiens

<400> 63
Met Pro Thr Val Val Val Met Asp Val Ser Leu Ser Met Thr Arg Pro
 1   5   10   15
Val Ser Ile Glu Gly Ser Glu Glu Tyr Gln Arg Lys His Leu Ala Ala
            20   25   30
His Gly Leu Thr Met Leu Phe Glu His Met Ala Thr Asn Tyr Lys Leu
         35   40   45
Glu Phe Thr Ala Leu Val Val Phe Ser Ser Leu Trp Glu Leu Met Val
         50   55   60
Pro Phe Thr Arg Asp Tyr Asn Thr Leu Gln Glu Ala Leu Ser Asn Met
 65   70   75   80
Asp Asp Tyr Asp Lys Thr Cys Leu Glu Ser Ala Leu Val Gly Val Cys
                85   90   95
Asn Ile Val Gln Gln Glu Trp Gly Gly Ala Ile Pro Cys Gln Val Val
                100   105   110
Leu Val Thr Asp Gly Cys Leu Gly Ile Gly Arg Gly Ser Leu Arg His
            115   120   125
Ser Leu Ala Thr Gln Asn Gln Arg Ser Glu Ser Asn Arg Phe Pro Leu
         130   135   140
Pro Phe Pro Phe Pro Ser Lys Leu Tyr Ile Met Cys Met Ala Asn Leu
145   150   155   160
Glu Glu Leu Gln Ser Thr Asp Ser Leu Glu Cys Leu Glu Arg Leu Ile
                165   170   175
Tyr Leu Asn Asn Gly Glu Gly Gln Ile Phe Thr Ile Asp Gly Pro Leu
                180   185   190
Cys Leu Lys Asn Val Gln Ser Met Phe Gly Lys Leu Ile Asp Leu Ala
            195   200   205
Tyr Thr Pro Phe His Ala Val Leu Lys Cys Gly His Leu Thr Ala Asp
         210   215   220
Val Gln Val Phe Pro Arg Pro Glu Pro Phe Val Val Asp Glu Glu Ile
225   230   235   240
Asp Pro Ile Pro Lys Val Ile Asn Thr Asp Leu Glu Ile Val Gly Phe
                245   250   255
Ile Asp Ile Ala Asp Ile Ser Ser Pro Pro Val Leu Ser Arg His Leu

```
                 260                    265                    270
Val Leu Pro Ile Ala Leu Asn Lys Glu Gly Asp Glu Val Gly Thr Gly
             275                    280                    285
Ile Thr Asp Asp Asn Glu Asp Glu Asn Ser Ala Asn Gln Ile Ala Gly
         290                    295                    300
Lys Ile Pro Asn Phe Cys Val Leu Leu His Gly Ser Leu Lys Val Glu
305                    310                    315                    320
Gly Met Val Ala Ile Val Gln Leu Gly Pro Glu Trp His Gly Met Leu
                 325                    330                    335
Tyr Ser Gln Ala Asp Ser Lys Lys Lys Ser Asn Leu Met Met Ser Leu
             340                    345                    350
Phe Glu Pro Gly Pro Glu Pro Leu Pro Trp Leu Gly Lys Met Ala Gln
         355                    360                    365
Leu Gly Pro Ile Ser Asp Ala Lys Glu Asn Pro Tyr Gly Glu Asp Asp
         370                    375                    380
Asn Lys Ser Pro Phe Pro Leu Gln Pro Lys Asn Lys Arg Ser Tyr Ala
385                    390                    395                    400
Gln Asn Val Thr Val Trp Ile Lys Pro Ser Gly Leu Gln Thr Asp Val
                 405                    410                    415
Gln Lys Ile Leu Arg Asn Ala Arg Lys Leu Pro Glu Lys Thr Gln Thr
             420                    425                    430
Phe Tyr Lys Glu Leu Asn Arg Leu Arg Lys Ala Ala Leu Ala Phe Gly
         435                    440                    445
Phe Leu Asp Leu Leu Lys Gly Val Ala Asp Met Leu Glu Arg Glu Cys
    450                    455                    460
Thr Leu Leu Pro Glu Thr Ala His Pro Asp Ala Ala Phe Gln Leu Thr
465                    470                    475                    480
His Ala Ala Gln Gln Leu Lys Leu Ala Ser Thr Gly Thr Ser Glu Tyr
                 485                    490                    495
Ala Ala Tyr Asp Gln Asn Ile Thr Pro Leu His Thr Asp Phe Ser Gly
             500                    505                    510
Ser Ser Thr Glu Arg Ile
         515
```

<210> 64

<211> 2155

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (65)..(1405)

<400> 64

```
gtcgcgacgg gggttcaggg aatatttact gggcctctcc gctccctctg ctcttggagg 60

tgccatgagg tcagttagct acgtgcagcg cgtggcgctg gagttcagcg ggagcctctt 120

cccgcacgca atctgcctcg gagacgttga taacgatacg ttaaatgaac tggtggtggg 180

agacaccagc gggaaggtgt ctgtgtataa aaatgatgac agtcggccat ggctcacctg 240

ttcctgccag ggaatgctga cttgcgctgg ggttggagac gtgtgtaata aaggaaagaa 300

cctgttggtg gcagtgagtg ctgaaggctg gtttcatttg tttgacctga cacctgccaa 360

ggtgttggat gcttctgggc accacgagac actaatcgga gaggagcagc gtccagtctt 420

caagcagcac atccctgcca acaccaaggt catgctgatc agcgacatcg atggagatgg 480

gtgtcgtgag ctggtggtgg gctacacaga ccgtgtggtg cgagctttcc gctgggagga 540

gctaggtgag ggtcctgaac atctgacagg gcagctggtg tccctcaaga aatggatgct 600

ggagggtcag gtggacagcc tctcagtgac tctggggcca ctgggtcttc ctgaactgat 660

ggtgtctcag ccaggttgtg cgtatgcaat tctactgtgt acctggaaaa aggacactgg 720

gtcccctcct gcctctgaag ggcccacgga tggtagtagg gagacccccag ctgcccgaga 780

cgtggtgctg caccagacat ctggccgtat ccacaacaag aatgtctcca ctcacctaat 840

tggcaacatc aaacaaggcc acggcactga gagtagtggc tctggcctct ttgccctgtg 900

caccctggat gggacactga agctcatgga agaaatggaa gaagcagaca agctgctgtg 960

gtcagtgcag gtggatcacc agctctttgc cctggagaaa ctggatgtca ccggcaacgg 1020

gcatgaggag gtagttgcat gcgcctggga tggacagaca tatatcattg atcacaaccg 1080

caccgtcgtc cgcttccaag tggatgaaaa tatccgtgcc ttctgtgcgg gcctgtacgc 1140

ctgcaaagag ggccgcaaca gcccctgcct cgtatatgtc actttcaacc agaagatcta 1200

tgtgtactgg gaggtgcagc tggagcggat ggagtctacc aatctggtga aactgctgga 1260

gaccaagccg gagtaccaca gcctgctgca ggagctgggc gtggatcctg acgacctccc 1320

tgtgactcgt gccctgcttc accaaacgct ctaccatcca gaccagccac cacagtgtgc 1380

tccctcaagc ctccaggatc ccacctagct gtacttgcct catagctggt gaaggattct 1440

tctgaacccc caccctaccc cctaaaggta tctgtggtat tggcaggata gggaatatgc 1500

attacagaaa tgcaggattt gactctgggc atgaaagatg gcagcagccc tagggtgacc 1560

gtgaactata gacctcgcag tcttttcggt gaaagaagag acaagttgac cctctgccca 1620
```

tttccttatg gacctcaccc atcatgccag cagggtcata ggaccctggc cttgttccaa 1680

atcatctggg acatgaccca ctccccactg tcactgtgtt gaaaacagag acttgtttgt 1740

gtggccccaa cacccataag gaaaccaggc tttaggccca ggggagcagt ggaggtaagg 1800

gctccacccc atcttaagct ctgtcttccg tggcacaatt ccaagttctt gacgttagta 1860

attgttaaag gaatggcaaa ctgttttgtt ttgaaggatc tttctacagt ctggtcttac 1920

ccatgttcct agcaaccctg agatgatttt cttccattta ccaaagcagc cgggtcagtg 1980

ccttctcacg ttgccgtatt cttcaggtat tagtcagctt cagaagccct gctcccattt 2040

ttccacccac ccattccccc ataaaacagc ttattgtctc caagacaata gacatttaaa 2100

atgtgatgcg ggtttatgat ccagaccaca atcagaatta tatcttgggt cattt 2155

<210> 65

<211> 447

<212> PRT

<213> Homo sapiens

<400> 65

Met Arg Ser Val Ser Tyr Val Gln Arg Val Ala Leu Glu Phe Ser Gly
1   5   10   15

Ser Leu Phe Pro His Ala Ile Cys Leu Gly Asp Val Asp Asn Asp Thr
                20   25   30

Leu Asn Glu Leu Val Val Gly Asp Thr Ser Gly Lys Val Ser Val Tyr
                35   40   45

Lys Asn Asp Asp Ser Arg Pro Trp Leu Thr Cys Ser Cys Gln Gly Met
        50   55   60

Leu Thr Cys Ala Gly Val Gly Asp Val Cys Asn Lys Gly Lys Asn Leu
65   70   75   80

Leu Val Ala Val Ser Ala Glu Gly Trp Phe His Leu Phe Asp Leu Thr
                85   90   95

Pro Ala Lys Val Leu Asp Ala Ser Gly His His Glu Thr Leu Ile Gly
                100   105   110

Glu Glu Gln Arg Pro Val Phe Lys Gln His Ile Pro Ala Asn Thr Lys
        115   120   125

Val Met Leu Ile Ser Asp Ile Asp Gly Asp Gly Cys Arg Glu Leu Val
        130   135   140

Val Gly Tyr Thr Asp Arg Val Val Arg Ala Phe Arg Trp Glu Glu Leu

```
145                    150                    155                    160
Gly Glu Gly Pro Glu His Leu Thr Gly Gln Leu Val Ser Leu Lys Lys
                165                    170                    175
Trp Met Leu Glu Gly Gln Val Asp Ser Leu Ser Val Thr Leu Gly Pro
                180                    185                    190
Leu Gly Leu Pro Glu Leu Met Val Ser Gln Pro Gly Cys Ala Tyr Ala
            195                    200                    205
Ile Leu Leu Cys Thr Trp Lys Lys Asp Thr Gly Ser Pro Pro Ala Ser
        210                    215                    220
Glu Gly Pro Thr Asp Gly Ser Arg Glu Thr Pro Ala Ala Arg Asp Val
225                    230                    235                    240
Val Leu His Gln Thr Ser Gly Arg Ile His Asn Lys Asn Val Ser Thr
                245                    250                    255
His Leu Ile Gly Asn Ile Lys Gln Gly His Gly Thr Glu Ser Ser Gly
                260                    265                    270
Ser Gly Leu Phe Ala Leu Cys Thr Leu Asp Gly Thr Leu Lys Leu Met
            275                    280                    285
Glu Glu Met Glu Glu Ala Asp Lys Leu Leu Trp Ser Val Gln Val Asp
        290                    295                    300
His Gln Leu Phe Ala Leu Glu Lys Leu Asp Val Thr Gly Asn Gly His
305                    310                    315                    320
Glu Glu Val Val Ala Cys Ala Trp Asp Gly Gln Thr Tyr Ile Ile Asp
                325                    330                    335
His Asn Arg Thr Val Val Arg Phe Gln Val Asp Glu Asn Ile Arg Ala
                340                    345                    350
Phe Cys Ala Gly Leu Tyr Ala Cys Lys Glu Gly Arg Asn Ser Pro Cys
            355                    360                    365
Leu Val Tyr Val Thr Phe Asn Gln Lys Ile Tyr Val Tyr Trp Glu Val
        370                    375                    380
Gln Leu Glu Arg Met Glu Ser Thr Asn Leu Val Lys Leu Leu Glu Thr
385                    390                    395                    400
Lys Pro Glu Tyr His Ser Leu Leu Gln Glu Leu Gly Val Asp Pro Asp
                405                    410                    415
Asp Leu Pro Val Thr Arg Ala Leu Leu His Gln Thr Leu Tyr His Pro
            420                    425                    430
Asp Gln Pro Pro Gln Cys Ala Pro Ser Ser Leu Gln Asp Pro Thr
```

435   440   445

<210> 66

<211> 1793

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (152)..(760)

<400> 66

aaaaaaaaaa aaaaaaaaat ataatccaca cctactactc aataccttag aaaatcttcg 60

cttccctaat aatgttgaac cagttacaaa tcgttttatt acacagtggc ttaatgatgt 120

tgactgtttc ttggggcttc atgacagaaa gatgtgtgtt ctcggactct gtgctcttat 180

tgatatggaa cagataccc aagttttaaa tcaggtttct ggacagattt tgccggcttt 240

tatcctttta tttaacggat tgaaaagagc atatgcctgc catgcagaac atgagaatga 300

cagtgatgat gatgatgaag ctgaagatga tgatgaaacc gaggaactgg ggagtgatga 360

agatgatatt gatgaagatg ggcaagaata tttggagatt ctggctaagc aggctggtga 420

agatggagat gatgaagatt gggaagaaga tgatgctgaa gagactgctc tggaaggcta 480

ttccacaatc attgatgatg aagataaccc tgttgatgag tatcagatat ttaaagctat 540

ctttcaaact attcaaaatc gtaatcctgt gtggtatcag gcactgactc acggtcttaa 600

tgaagaacaa agaaaacagt tacaggacat agcaactctg gctgatcaaa gaagagcagc 660

ccatgaatcc aaaatgattg agaagcatgg aggatacaaa ttcagtgctc cagttgtgcc 720

aagttctttc aattttggag gcccagcacc agggatgaat tgagttatct ctttctttcc 780

tgctgtgtgc ttgtagtgaa gagcttgtgt tcctcctagt agtggttcca gaactggttc 840

atgttatcta ttctaaacta ataatcaata gatggacaaa agaaacaaca accccaggag 900

atgggacctg atcatgcaac ctggcactgg aaaagaaatc agcgggattt tggggtggg 960

ggggatggga ggtaccttag agggagtatt ttctttattt tttgaagaaa gtaagatcct 1020

gactctgaag cttcaaagtg acactgtgga aatctgaaac gaggggatgt catgaaggca 1080

gcttttcttt ttctgaggaa aaaataggca tgggctacag gactatttaa aatgtctcat 1140

ttacagtata aaactcaaag gtagatgtaa ttttacacc tatgagtatt tgtccaattt 1200

ctgtctcttc ctcaccattg ggtatctatt ctttatatgt aaataagata aggtcatctg 1260

atagccttat tcagtcttca tcattttcat cattgttcct atgtagatta ttggacattt 1320

attgtagcac tacataactg attataaaaa tctgtaaatg aattagcact ttcatattga 1380

aacaagcctg ctagcctatg tataaaatag caaaatgttt gctgtttata aaaagatgta 1440

atggggtggg gggcaggggt aatttcaagt tattaattta aaaatgaact agcaattttg 1500

tacctggtga ctttgtggtg cactcacctc tgatagtgac ttgaattcgg tatgtaaaaa 1560

ggggttagtg gtatttcatt gctgctaaaa atgacaactc cctctgtgtc ctgtttttct 1620

taaagctgtc agtgtacaag tgggtatttg aataccagac cttactgtaa aaaataaaaa 1680

aggtggtatc tagagcatgt aaattggata taaagttctg ctcttaaaga gttgatctaa 1740

gagtatggct aaacatctat atatgcaatc tattaaaaga acttaattcg gct   1793

<210> 67

<211> 203

<212> PRT

<213> Homo sapiens

<400> 67

```
Met Cys Val Leu Gly Leu Cys Ala Leu Ile Asp Met Glu Gln Ile Pro
1               5                   10                  15

Gln Val Leu Asn Gln Val Ser Gly Gln Ile Leu Pro Ala Phe Ile Leu
                20                  25                  30

Leu Phe Asn Gly Leu Lys Arg Ala Tyr Ala Cys His Ala Glu His Glu
            35                  40                  45

Asn Asp Ser Asp Asp Asp Glu Ala Glu Asp Asp Asp Glu Thr Glu
        50                  55                  60

Glu Leu Gly Ser Asp Glu Asp Asp Ile Asp Glu Asp Gly Gln Glu Tyr
65                  70                  75                  80

Leu Glu Ile Leu Ala Lys Gln Ala Gly Glu Asp Gly Asp Asp Glu Asp
                85                  90                  95

Trp Glu Glu Asp Asp Ala Glu Glu Thr Ala Leu Glu Gly Tyr Ser Thr
                100                 105                 110

Ile Ile Asp Asp Glu Asp Asn Pro Val Asp Glu Tyr Gln Ile Phe Lys
            115                 120                 125

Ala Ile Phe Gln Thr Ile Gln Asn Arg Asn Pro Val Trp Tyr Gln Ala
        130                 135                 140

Leu Thr His Gly Leu Asn Glu Glu Gln Arg Lys Gln Leu Gln Asp Ile
145                 150                 155                 160

Ala Thr Leu Ala Asp Gln Arg Arg Ala Ala His Glu Ser Lys Met Ile
```

<div align="right">165   170   175</div>

Glu Lys His Gly Gly Tyr Lys Ph Ser Ala Pro Val Val Pro Ser Ser

<div align="center">180   185   190</div>

Phe Asn Phe Gly Gly Pro Ala Pro Gly Met Asn

<div align="center">195   200</div>

<210> 68

<211> 2160

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (115)..(1146)

<400> 68

```
gtcgcgagag gttgttcgcg ccttgagagt taagcgaagt gtggtggctt ccaaggaata  60
caaacataaa ggccttcgac cgttgcaaat agactaaagt gaaaacaaat ctgaatgaag 120
atgaagttat ttcagaccat ttgcaggcag ctcaggagtt caaagttttc tgtggaatca 180
gctgcccttg tggctttctc tacttcctct tactcatgtg gccggaagaa aaaagtgaac 240
ccatatgaag aagtggacca agaaaaatac tctaatttag ttcagtctgt cttgtcatcc 300
agaggcgtcg cccagacccc gggatcggtg gaggaagatg ctttgctctg tggacccgtg 360
agcaagcata agctgccaaa ccaaggtgag gacagacgag tgccacaaaa ctggtttcct 420
atcttcaatc cagagagaag tgataaacca aatgcaagtg atccttcagt tcctttgaaa 480
atccccttgc aaaggaatgt gataccaagt gtgacccgag tccttcagca gaccatgaca 540
aaacaacagg ttttcttgtt ggagaggtgg aaacagcgga tgattctgga actgggagaa 600
gatggcttta aagaatacac ttcaaacgtc tttttacaag ggaaacggtt ccacgaagcc 660
ttggaaagca tactttcacc ccaggaaacc ttaaaagaga gagatgaaaa tctcctcaag 720
tctggttaca ttgaaagtgt ccagcatatt ctgaaagatg tcagtggagt gcgagctctt 780
gaaagtgctg ttcaacatga aaccttaaac tatataggtc tgctggactg tgtggctgag 840
tatcagggca agctctgtgt gattgattgg aagacatcag agaaaccaaa gccttttatt 900
caaagtacat ttgacaaccc actgcaagtt gtggcataca tgggtgccat gaaccatgat 960
accaactaca gctttcaggt tcaatgtggc ttaattgtgg tggcctacaa agatggatca 1020
cctgcccacc cacatctcat ggatgcagag ctctgttccc agtactggac caagtggctt 1080
cttcgactag aagaatatac ggaaaagaaa aagaaccaga atattcagaa accagaatat 1140
```

```
tcagaatagg gagcaagttg ctatttggga acattcagca ccttctcaca gtttggtaac 1200
atatattgct gtttactcca gtgtaaaaat gaggtgccac tggatctgag tgctacacga 1260
acacaagtag aagtattaat ttgttgaaat gtgttgttac caaaaagact gaaaagcccc 1320
aaagtctaga tataaagacc tagacttcgg cacgcgaaat cccagctatg ctacctctta 1380
tttacctgaa aggaggacac gcaggatggg cagtcatgct ggtgactctt gtactccctt 1440
gagggacatt gggggggggg gggcgtggtc ccaggcagga tgcccagtct ttgagctgag 1500
attggaaggc agtgaggctg agggtgccaa gatttcccca gggttcaccc agaggggaag 1560
gggctacatg cccccagctg tgtgcaggga ggacacatca gcccactacc gctgccaaca 1620
ccaatgccta aaacttgttt catacattgg ggttttctat atatttcagc tgggaaaagc 1680
ttacatttaa ccttttgaaa aaataaatac gtgattagcc tcaactaaac attgctgact 1740
ataaagacag tatattcacc atgtcgctgg caatatgtcg ttgcgtaaca ccaaataacc 1800
ccccagaagt agccagaggc cagtttgaac atcacaattc taagtgtttt agtaactatt 1860
tctggcgtga gtcaacagat catgtagata gagtcaatta ttgtttgtgg agtttttcag 1920
ctataggga ggggaactat taaaatccat ttgtttctat tcaataggta ataaaaatta 1980
gttgtccctg ggtttgggaa acttaaatgc ccattacagc cctggggaag ggttttctgt 2040
cttatggagt gagtcttagc atttaagtta tacagttgct gccttaaaat agtagcctgc 2100
tacaatgact tctttgggta gccattttca taagaaataa aatacaagat atgagtaatg 2160
```

<210> 69
<211> 344
<212> PRT
<213> Homo sapiens

<400> 69

```
Met Lys Met Lys Leu Phe Gln Thr Ile Cys Arg Gln Leu Arg Ser Ser
1               5                   10                  15
Lys Phe Ser Val Glu Ser Ala Ala Leu Val Ala Phe Ser Thr Ser Ser
                20                  25                  30
Tyr Ser Cys Gly Arg Lys Lys Lys Val Asn Pro Tyr Glu Glu Val Asp
            35                  40                  45
Gln Glu Lys Tyr Ser Asn Leu Val Gln Ser Val Leu Ser Ser Arg Gly
        50                  55                  60
Val Ala Gln Thr Pro Gly Ser Val Glu Glu Asp Ala Leu Leu Cys Gly
65                  70                  75                  80
Pro Val Ser Lys His Lys Leu Pro Asn Gln Gly Glu Asp Arg Arg Val
```

```
                    85                    90                    95
Pro Gln Asn Trp Phe Pro Ile Phe Asn Pro Glu Arg Ser Asp Lys Pro
                100                   105                   110
Asn Ala Ser Asp Pro Ser Val Pro Leu Lys Ile Pro Leu Gln Arg Asn
            115                   120                   125
Val Ile Pro Ser Val Thr Arg Val Leu Gln Gln Thr Met Thr Lys Gln
        130                   135                   140
Gln Val Phe Leu Leu Glu Arg Trp Lys Gln Arg Met Ile Leu Glu Leu
145                   150                   155                   160
Gly Glu Asp Gly Phe Lys Glu Tyr Thr Ser Asn Val Phe Leu Gln Gly
                165                   170                   175
Lys Arg Phe His Glu Ala Leu Glu Ser Ile Leu Ser Pro Gln Glu Thr
            180                   185                   190
Leu Lys Glu Arg Asp Glu Asn Leu Leu Lys Ser Gly Tyr Ile Glu Ser
            195                   200                   205
Val Gln His Ile Leu Lys Asp Val Ser Gly Val Arg Ala Leu Glu Ser
        210                   215                   220
Ala Val Gln His Glu Thr Leu Asn Tyr Ile Gly Leu Leu Asp Cys Val
225                   230                   235                   240
Ala Glu Tyr Gln Gly Lys Leu Cys Val Ile Asp Trp Lys Thr Ser Glu
                245                   250                   255
Lys Pro Lys Pro Phe Ile Gln Ser Thr Phe Asp Asn Pro Leu Gln Val
                260                   265                   270
Val Ala Tyr Met Gly Ala Met Asn His Asp Thr Asn Tyr Ser Phe Gln
            275                   280                   285
Val Gln Cys Gly Leu Ile Val Val Ala Tyr Lys Asp Gly Ser Pro Ala
        290                   295                   300
His Pro His Leu Met Asp Ala Glu Leu Cys Ser Gln Tyr Trp Thr Lys
305                   310                   315                   320
Trp Leu Leu Arg Leu Glu Glu Tyr Thr Glu Lys Lys Lys Asn Gln Asn
                325                   330                   335
Ile Gln Lys Pro Glu Tyr Ser Glu
            340
```

<210> 70

<211> 1998

<212> DNA

<213> Homo sapiens

<400> 70

ttttagaatg gcacatcata tctcattgat gccaacatgg ttttgtccat ggttctgact 60

ttctgtgaag gcaccagctt gcaatatgcc atcccatttc accttgcatg tgagacagca 120

aacaaaatcc acaaatggtg tgaactaata tgctggctgc taccttgcat aaattaatga 180

tttgatcaca cgggttcttc gtggggttac atctgtgaat agcctgtttt ccacatgtaa 240

atttgtgcct tacaccttga gttgtgtaca cttgtaaact ctttatgatc aactgttccc 300

ccttttgaaa taagtgcaga tatttattta accctccctt ccccacccotc tgccccactt 360

ccagccctct gaaagattgg agtcaagcag atggaagaat gcagtggtga tagttgtcat 420

gcgacagcct gagaacgctg ggcagcacca caccctccaa ttcacactgc cttctagttg 480

tgccaactgg aaccacccтt tggctgtgct gcgaagcatg gaccccagtg ttgttgtggg 540

tgtgtcaaat cccctttcat cctcaagagc tccctgcttc ccttagatta tttcaatacg 600

gtgatatcct tatttgctag cagaaaaggg actaacgtcc cattcctctt ttctgctgcg 660

tccactggct agagagcagg cggtgcgcgg ttgggcagac acctgggagg agtctccaag 720

ccatgtgcac agcacacacg tgcagtgcac acaaagaaat gacatggaaa tagatgcagg 780

caggctggtc cctgctgtga ttaacgagta actccaagta caaggccgac cacaatggat 840

gctgcaaaaa cgttgactgg ggcaaaggat ttttattтt atttttatt ttgttaatta 900

tgttttagg ggatgggagg tggtgtgtgt ttttctcctc ttggttttca tttgctcaag 960

cacacaaaag ggacttttgt ttactctatc atgaacaaag gaactgtcca catactgtaa 1020

accatgagca gtgttgttgt tgttttttta aacagtatat ttggtggtct ctttgtctgc 1080

ttttatttcc agttcgatct tctgggttta gttttgtctt taaaaagaat tcaaaaaaag 1140

actgacaatg acagttttga gttggatagt taaaaaagtg gagcctccat aatcagtgtg 1200

gttgccttca gacctgagta cttagctgag ggtgggtgag agccctttgt tccaaaagtc 1260

cattagtttt gctgttattt aggagtaggt ggttgttgtt gttttтactt tttttttttt 1320

tggcttttgt aatggaatcc atgttcacat cctgtgaact ctgtctcctg aaaccctgaa 1380

gtatttccta gaacctgaaa tattgttттc ttccttgaat tttctctaga aatgcagaaa 1440

ttaggaaggt gatgggtctg tatccccctg cccccttctt tccatgctt gactcccgag 1500

agtactggca gtgcagcacc catcattgac gtaagcggct gtcttgtcca gtgtttgtag 1560

gcatcactgc ctcagctgtt aaggagacct gtgtcaaaac ttacatccac attcctacac 1620

ccccacaacc catcacttct ggtgttaacc ctaaaatacc cacatgtatt gagctggtct 1680

tctgcattta agtatttctc cccagttttt ttccccactg tgtgtggggg gagggtccat 1740

aaacccgagt gtgcctttgc tttccaccct tgctagacac tggtagatgc aacaaactca 1800

gatttatatt tgttgtaaag ttgtaaaaat attgtgatgt caccaatttt ccttccatct 1860

```
ccacatcccc taacatctga ttcacgactt aatgtatgtt gtaagaaaag aaaaaagaaa 1920
agaaaaaaag ggaaaaaaga aaagcaagga aaaggctctt tattacttaa aagtaataaa 1980
acctgactgt tctatatt                                                 1998
```

<210> 71
<211> 1763
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (540)..(1529)

<400> 71
```
gatgcggctg tgattgctga attgtctggg caggtttgga gtctctggca agctcccctg 60
actgtgcatc cctctggaga cgaagaggag ggggaggcct gtcctctctg ggatccattg 120
gtcacatccc cctgaggatt cccgaatgcc tacctccagt gtcgtcaaca tggagttctg 180
aagtccatgt ggctcttcac agtgaatcag gtgttaagga agatgcagag acgccacagc 240
agcaacacgg ataacattcc acctgaaagc tgtgaccaag gctggcccct ctggggaact 300
gggggccatt gaacttgaag actgcagagc cagcggtcct tgggatcccg agaaaccgca 360
gccaggcgct cagctccgag gcgagtgtgg atgaaggtgg cgtctttgag agtctgaagg 420
cagaggcagc ctccccacca gcgctcttct cgggcttatc aggcagcctc cccaccagct 480
cgttcccctc cagcctggtg ctgggctcct cggctggcgg cggggacgtg ttcatccaga 540
tgcccgcgtc cagggaggaa ggaggggggcc ggggcgaggg ggcgcctac caccaccgcc 600
agccccacca ccatttccac catggcggcc accgcggggg ctccctgctg cagcacgtgg 660
gtggggacca ccgggggcac tcggaggagg gaggcgacga gcagcctggg acgcccgccc 720
ccgccctgtc cgagctgaag gctgtgatct gctggctcca gaaaggactc cccttcatcc 780
tgatcctcct ggccaaactg tgctttcagc ataagctcgg cattgctgtg tgcatcggga 840
tggccagcac cttcgcctat gccaactcca cgcttcgaga acaggtctca ctgaaggaga 900
agaggtcagt gctggtcatc ttgtggatcc tggcctttct ggcggggaac accctctatg 960
tgctttatac attcagctcc cagcagctgt acaacagcct catattcctg aagcccaacc 1020
tggagatgct ggacttcttt gacctgctat ggattgtggg gatcgcagac tttgttctga 1080
agtacatcac catcgccctc aagtgcctca tcgtggccct gcccaagatc atcctggccg 1140
tcaagtccaa gggaaagttc tatctggtca tcgaggagct gagccagctg ttccgatccc 1200
ttgtccccat ccagctgtgg tacaaataca tcatgggtga cgactcctcc aacagctact 1260
```

tcctgggcgg ggtcctgatc gttctctaca gcctctgcaa gtccttcgac atctgtggac 1320

gtgtgggcgg agttaggaaa gccctgaagc ttctctgtac ctctcagaac tatggagtcc 1380

gagccaccgg gcagcagtgc acagaagctg gtgacatctg cgccatctgt caggccgagt 1440

tccgagagcc tctgattctc ctgtgccaga tgctgttgaa ggggcacaag aaattggagc 1500

tggagaagat tgatgaaagt gcaggtgtgt aaggaaatag aacagtctgc tgggagtcag 1560

acctggaatt ctgattccaa actctttatt actttgggaa gtcactcagc ctccccgtag 1620

ccatctccag ggtgacggaa cccagtgtat tacctgctgg aaccaaggaa actaacaatg 1680

taggttacta gtgaataccc caatggtttc tccaattatg cccatgccac caaaacaata 1740

aaacaaaatt ctctaacact gat 1763

<210> 72

<211> 330

<212> PRT

<213> Homo sapiens

<400> 72

Met Pro Ala Ser Arg Glu Glu Gly Gly Gly Arg Gly Glu Gly Gly Ala
1   5   10   15

Tyr His His Arg Gln Pro His His His Phe His His Gly Gly His Arg
            20   25   30

Gly Gly Ser Leu Leu Gln His Val Gly Gly Asp His Arg Gly His Ser
        35   40   45

Glu Glu Gly Gly Asp Glu Gln Pro Gly Thr Pro Ala Pro Ala Leu Ser
    50   55   60

Glu Leu Lys Ala Val Ile Cys Trp Leu Gln Lys Gly Leu Pro Phe Ile
65   70   75   80

Leu Ile Leu Leu Ala Lys Leu Cys Phe Gln His Lys Leu Gly Ile Ala
                85   90   95

Val Cys Ile Gly Met Ala Ser Thr Phe Ala Tyr Ala Asn Ser Thr Leu
            100   105   110

Arg Glu Gln Val Ser Leu Lys Glu Lys Arg Ser Val Leu Val Ile Leu
            115   120   125

Trp Ile Leu Ala Phe Leu Ala Gly Asn Thr Leu Tyr Val Leu Tyr Thr
            130   135   140

Phe Ser Ser Gln Gln Leu Tyr Asn Ser Leu Ile Phe Leu Lys Pro Asn

```
        145               150               155               160
    Leu Glu Met Leu Asp Phe Phe Asp Leu Leu Trp Ile Val Gly Ile Ala
                    165               170               175
    Asp Phe Val Leu Lys Tyr Ile Thr Ile Ala Leu Lys Cys Leu Ile Val
                    180               185               190
    Ala Leu Pro Lys Ile Ile Leu Ala Val Lys Ser Lys Gly Lys Phe Tyr
                195               200               205
    Leu Val Ile Glu Glu Leu Ser Gln Leu Phe Arg Ser Leu Val Pro Ile
            210               215               220
    Gln Leu Trp Tyr Lys Tyr Ile Met Gly Asp Asp Ser Ser Asn Ser Tyr
    225               230               235               240
    Phe Leu Gly Gly Val Leu Ile Val Leu Tyr Ser Leu Cys Lys Ser Phe
                    245               250               255
    Asp Ile Cys Gly Arg Val Gly Gly Val Arg Lys Ala Leu Lys Leu Leu
                260               265               270
    Cys Thr Ser Gln Asn Tyr Gly Val Arg Ala Thr Gly Gln Gln Cys Thr
                275               280               285
    Glu Ala Gly Asp Ile Cys Ala Ile Cys Gln Ala Glu Phe Arg Glu Pro
        290               295               300
    Leu Ile Leu Leu Cys Gln Met Leu Leu Lys Gly His Lys Lys Leu Glu
    305               310               315               320
    Leu Glu Lys Ile Asp Glu Ser Ala Gly Val
                325               330
```

<210> 73
<211> 3493
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (40)..(396)

<400> 73
agaccggaaa cggaggagag cgcgggggat gtgtttggca tggggacgca ctgttacagt 60

```
tgcgctcctg gttggctttg tgtttccgcg gtgttggtag agtctcggtg tttctacctc 120
ttagcaccct ttcctgccac cctttgtcct gtggaagccc ggagacatca gcggctgcaa 180
ttttgctact cgctgctcgg catggaacgg tcaggtaccg cagttcagcg ctcttggccc 240
cgcaggtcct cgggcatccc cgtgccccgt gctgtacatt cagttatcct ccgacttccc 300
ggggtcgaag gtattacctg ctgggtttta gaatctattg ctttacatct gagaaaagaa 360
aaatcccaga aagataagat gacttgccca agatcatagc gtgcctggaa gacagtgctc 420
cgattacaag ctggtcgctg tgcctcattc gtcttgtcat caactcctgt cagtttatcc 480
aagctccaaa agcgaagttg ttttagcttt tgcttcccaa gatttatttg atagtctcat 540
ttctgtttcc ttcgtttatt ctttcgttca ttattggaaa actttacagc gtgccagtac 600
tggtcataaa ccccagtgtg tcttaggcct tagtgagctg tgaggtgcat gaccttaggt 660
aagttacttc tctgattttc agtttcctta tctgcaaaat ggagacctta gggagttaat 720
gtgggtatga gaaatgtaca taaaacatat tgcacaaggt gaggcatgta gtgtatgcta 780
ataaatggta agttgctgct gctatggttg ttaacaataa ttataaaaag caaatggaaa 840
aggcttgaat tgaaaaaaat ttagacacat agttttttc cttattagcc tgcactgtat 900
ttttcatttt ttttaatgca tctttccagg acaaaaaata atatccaaag atattttggc 960
actaacagcg ctatctgtag caagaaagtt gagcagtgtg aactgttgag acttccaaga 1020
agacttcaga gaaccaagac agtgtaaagg aaaacaggaa aaaagacttg ttagacatta 1080
ttaagggcac gaaagttgaa ttgagcacag taaatgtaca aacaacaaag ccacccaaca 1140
gaagtccact aaaagctac aactggcccg cctcaaagag ctacagagca tgctccaaag 1200
aagagaaatg agcccgtgag tcctgagttg gtggcagctg catctgctgc tctgttttga 1260
caagcaaaca agccagaact gctcaggcag ctccgtagca tgaggaggag tcaggggcac 1320
agagagatgg agagagacct agttagagag cgaaccatgt gctggattta gccagtcctg 1380
catttttcta tacttcaaat caaaacgggc catgcttcac atctacccat gatgaatagg 1440
ggtactttga ttaagaataa atagagctga ctgaattctg aacaagaaaa acatattcaa 1500
ggggaagaga tgtaatagtt ttgacgtgac gacagttact aaagaagcac ctgaacagac 1560
acatcacctt cactttggga tgtggaattt gctaaataag ccacagaaaa tgaacatccc 1620
ttcagaatgg gtttgaagag ctgatccagt ggattaaaga ggggaaactg ggagtttcca 1680
gttaacaatg aagcaggagc tgactaaggc tttggaacag aaaccagatg atgcacaata 1740
ttattgtcaa agagcttatt gtcacattct tcttgggagt tactatggat ctgtaaataa 1800
ctgacgaaaa acccatctgt ttctacgtag ttgctgttgc cgacacaaag aagtcttatg 1860
aactcaatcc aaataattcc actgctatgc tgagaaaagg gggctggcgg catggagtct 1920
tgctctgtca cccatcctcg agtgcaatgg caccatctta gttcactgca gccttgaatt 1980
ccagggctcg agccatcctt ctgcctctgc ctcctgagta ggtgggacta caggcatgtg 2040
ccaccatact gagctaattt gttaaacact tttttgtag agacgaggtc ttgctacgtt 2100
tcccagactg gtctctgaac tcccggcctc aagtgatcct actgccttgg cctcccaaag 2160
tactggcata atagacatga gccactgcac ctggctccta agttcttttc ttgaataata 2220
```

```
tctttctttt tttttatttt ttgaggtgga gtctcaccct gttgcccagg ctggagtgca 2280
atggcgtgat ctcggctcac tgcaacttct acctcccggg ttcaagtgat tctcctgcct 2340
cagcctcctg aatagctagg attacaggcg tgcgctacca cgcctggcta attttttgtg 2400
tctttagtag agatgcggtt tcaccatgtt ggccaggctt gtctcgaact cttgacctcg 2460
tgatccaccc gccttggcct cccaaagtgt tgggattaca ggcgtgagcc accacgcctg 2520
gccaagtaat atcttaatat catgccattg acatttatcc tctaattatt tcagaggtgg 2580
ccttcagaag aaggcctctt tggtaaaatt gctattgagg atatttcact gaaaaacaaa 2640
tttatcttta aatttaaatc caggaaaaat ttaaactttc aggcttctat ttttatcaga 2700
cagggtaaaa aatttataac tcagaatatt accctttccc ctctttgtgt gatggattgc 2760
ttggtttttag ttactgatta tttaaaataa taagttattc aaatctagga ttttgataca 2820
atagttcttc tctagaatat agtgtgtgtg tgagagtata tttaaaattt ttattaaggc 2880
ccatggggca gcctttgagg aaaccagacc ttggggatcg ccaggcagga ttagtggcag 2940
gaattgagag aacagagccc cacagagctc ctcggggacc gtcccccagt cacaagagta 3000
tctcaaggaa gtagtcttct cccacatccc ccaaagataa ctaccagagg gtcagttctc 3060
tgagcccttc tcagtgtaga aaagacaagt gtcaaagctt ccccactcac cctgagtttg 3120
ccttctatga caatacgtcg tttggcctca ctgaggctga gcagaggatg ctggacctcc 3180
caggatattt tgggtcaaat gaagaggatg aaaccacaag tacacttagc gtggagaagc 3240
tggtgatcta gactgagaat cagcctgagc ttaacacagc tggggtctgc tactcgcgtt 3300
ttgtagactt ttgtgtaact atttgtaccg taggacagaa tgtgaggagg aagtaacaca 3360
cacagaggag gatgtgtgtg tgtgcatgtg tttgaattca caaggaagaa attatttatc 3420
ttgagctttt tcctttgtta ttcagttttt attggtttat tactaataat gataataaaa 3480
tgtaaacaag agc                                                   3493
```

<210> 74

<211> 119

<212> PRT

<213> Homo sapiens

<400> 74

```
Met Gly Thr His Cys Tyr Ser Cys Ala Pro Gly Trp Leu Cys Val Ser
 1               5                  10                  15
Ala Val Leu Val Glu Ser Arg Cys Phe Tyr Leu Leu Ala Pro Phe Pro
            20                  25                  30
Ala Thr Leu Cys Pro Val Glu Ala Arg Arg His Gln Arg Leu Gln Phe
        35                  40                  45
```

```
Cys Tyr Ser Leu Leu Gly Met Glu Arg Ser Gly Thr Ala Val Gln Arg
        50                  55                  60
Ser Trp Pro Arg Arg Ser Ser Gly Ile Pro Val Pro Arg Ala Val His
 65                  70                  75                  80
Ser Val Ile Leu Arg Leu Pro Gly Val Glu Gly Ile Thr Cys Trp Val
                    85                  90                  95
Leu Glu Ser Ile Ala Leu His Leu Arg Lys Glu Lys Ser Gln Lys Asp
                   100                 105                 110
Lys Met Thr Cys Pro Arg Ser
               115
```

<210> 75

<211> 2654

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (98)..(1027)

<400> 75

```
ccccgcctcc gcccccggct ggcgtgagct gggtgtttcc tgcctctctc agtccgggtt  60
tggagactcc tgcgtcctcc gactttttcgt ggaagagatg tcaggagaaa gtgtggtgag  120
ctcagcggtg ccagcggctg ctacccgcac cacttccttc aagggcacga gccccagctc  180
caaatacgtg aagctgaatg tgggtggagc cctctactat accaccatgc agacgctgac  240
caagcaggac accatgctga aggccatgtt cagcgggcgc atggaagtgc tcaccgacag  300
tgaaggctgg atcctcattg accgctgtgg gaagcacttt ggtacgatac tcaactacct  360
tcgagacggg gcggtgcctt acccgagag ccgccgggag atcgaggagc tgctagcaga  420
agccaagtac tacctagtcc aaggcctggt ggaagagtgc caggcggccc tacaaaacaa  480
agatacttat gagcctttct gcaaggtccc tgtgatcacc tcatccaagg aagaacaaaa  540
acttatagcg acttcaaata agccagccgt gaagttgctc tacaacagaa gtaacaacaa  600
atactcatat accagcaatt ctgacgacaa tatgttgaaa aacattgaac tgtttgataa  660
gctgtctctg cgctttaacg gaagggtcct gttcataaag gatgttattg gggatgaaat  720
ctgctgctgg tccttttatg gtcaggccg gaagattgct gaagtctgtt gtacctccat  780
cgtctatgcc actgagaaga aacagaccaa ggtggagttt cccgaagccc ggatttatga  840
```

```
ggagaccctg aacattttgc tgtatgaggc ccaggatggc cggggacctg acaatgcgct 900

cctggaggcc acaggcgggg cggcggggcg ctcccaccac ctggacgagg acgaggagcg 960

ggagcggatc gagcgcgtgc ggaggatcca catcaagcgc cctgatgacc gggcccacct 1020

ccaccagtga gcaggcaaga gaccgagccg ccctcctctc accgccccca ctccctgccg 1080

tgctacaccc agatcctgtg caggctgccg ggccccttct gcttcccttg gagcctggag 1140

atactttgt aacaagccag atgattattt tggtattgct tgacaaggca aattgattgt 1200

cttgacccag gcgtatgacc cctgtcgttg aacaagctgt gtctaagatc tctactttttc 1260

atgagaatct gagactcttt ggagccaggc tttctcggtt ctcagaggaa aagtatgaat 1320

gagtgtgaag tgtatgtgag aactttttgtt tgcaatattt attttttgtgg gtgtcggctt 1380

cctatgtggg ctttttgggt gacactccct taagggttca gtttgacaat tctgagagtt 1440

gtcctgcagt tggaggccac cagaggtatc tgagctccct gcttcctatt tcataatcct 1500

ccagccccag caggtccact cctggttcct gtgtgtttgg cccgggcaca atccccactg 1560

ctttgctaga cgtgctttct gccatgtggc tttgggccta gagcttgttg ataattgcag 1620

cttgtggcag gggaaatatg gctgaatgag cgtctaaatc gttgagacca gtgcaacttt 1680

gggtgcaagg ctttgtttag ggatcaagcc ttttgccacc ttgggctggt ctttggcctg 1740

gtgctcactg ggaccccata tgtctgcgta ggagcagaac tttccatggc agtaagtgtc 1800

cagctctgtt tctggttctt tccccaactc cagccccgtc cagttgttct cctgattgac 1860

ccgactccac tccaggaagg ccatctgacc ctgtgacagg catagctcat aaactacccc 1920

tccctgggat cccgctcctc ttcagcctcc ttccccatga agctgggcta actttctaag 1980

tcattttgct tagaaattca gtgtggccca taccctttgt cctcccagcc tggcatccag 2040

gcaggacac cctcacacca ccagccccag ggagcttccc tgctataaac acagacccccc 2100

ttgtctttgc ctctgatttt tacacagtgt agagtggcca gcagtgaaca ggttgaggat 2160

gtgcgggtag atagataact ttgggtctgg tttgtgtctg tgttcatgtt cgtttaaggg 2220

atatgtgtga ctgtgggtgg ggacgtgtgc ttgtggggca caggtggcgg cccctgctgg 2280

agcccggctg ggcgcagcgc ctatgtagga cgggtgttct cagtgaccta cctcccaggc 2340

tcctctgcac ctgcaaagga acaggagtga gtcgtgactg acaggggtgg ttgagactag 2400

actaggtaga gtagttacca ggagatgtga atgtgcgtca ggtgatggat gggtttgtca 2460

agggaatcgt taccgtttta taccaaaggt attaacatgg gcagcctttg acacatgtat 2520

tccaaaaacg agtttatatt ttcaaacggt ttttacagct tagactttgt acttactgcc 2580

ctgcctgtga cagttgtatg ccttcatttt gtatccaaca gcaaagtcta caataaaact 2640

ttaaaacaat catg                                                   2654
```

<210> 76
<211> 310
<212> PRT

<213> Homo sapiens

<400> 76

Met Ser Gly Glu Ser Val Val Ser Ser Ala Val Pro Ala Ala Ala Thr
1   5   10   15

Arg Thr Thr Ser Phe Lys Gly Thr Ser Pro Ser Ser Lys Tyr Val Lys
                20   25   30

Leu Asn Val Gly Gly Ala Leu Tyr Tyr Thr Thr Met Gln Thr Leu Thr
            35   40   45

Lys Gln Asp Thr Met Leu Lys Ala Met Phe Ser Gly Arg Met Glu Val
        50   55   60

Leu Thr Asp Ser Glu Gly Trp Ile Leu Ile Asp Arg Cys Gly Lys His
65   70   75   80

Phe Gly Thr Ile Leu Asn Tyr Leu Arg Asp Gly Ala Val Pro Leu Pro
                85   90   95

Glu Ser Arg Arg Glu Ile Glu Glu Leu Leu Ala Glu Ala Lys Tyr Tyr
                100   105   110

Leu Val Gln Gly Leu Val Glu Glu Cys Gln Ala Ala Leu Gln Asn Lys
            115   120   125

Asp Thr Tyr Glu Pro Phe Cys Lys Val Pro Val Ile Thr Ser Ser Lys
        130   135   140

Glu Glu Gln Lys Leu Ile Ala Thr Ser Asn Lys Pro Ala Val Lys Leu
145   150   155   160

Leu Tyr Asn Arg Ser Asn Asn Lys Tyr Ser Tyr Thr Ser Asn Ser Asp
                165   170   175

Asp Asn Met Leu Lys Asn Ile Glu Leu Phe Asp Lys Leu Ser Leu Arg
            180   185   190

Phe Asn Gly Arg Val Leu Phe Ile Lys Asp Val Ile Gly Asp Glu Ile
            195   200   205

Cys Cys Trp Ser Phe Tyr Gly Gln Gly Arg Lys Ile Ala Glu Val Cys
    210   215   220

Cys Thr Ser Ile Val Tyr Ala Thr Glu Lys Lys Gln Thr Lys Val Glu
225   230   235   240

Phe Pro Glu Ala Arg Ile Tyr Glu Glu Thr Leu Asn Ile Leu Leu Tyr
                245   250   255

Glu Ala Gln Asp Gly Arg Gly Pro Asp Asn Ala Leu Leu Glu Ala Thr

```
                260                 265                 270
Gly Gly Ala Ala Gly Arg Ser His His Leu Asp Glu Asp Glu Glu Arg
            275                 280                 285
Glu Arg Ile Glu Arg Val Arg Arg Ile His Ile Lys Arg Pro Asp Asp
        290                 295                 300
Arg Ala His Leu His Gln
305                 310
```

<210> 77
<211> 2517
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (274)..(687)

<400> 77

```
ttctacaggg atctggacaa ctctcctctg tccccacctt caccaaggac caaaagcaga  60
acgcatactc gggcactcaa gaagttaagt gaggtgaaca agcgcctcca ggatctccgt 120
tcctgtctga gccccaagcc acctcagggt caagagcaac agggccaaga ggatgaagtg 180
gtcttggtgg aagggcccac cctcccagag accccccgac tcttcccact caaaatccgt 240
tgccgggctg acctggtcag attgcccctc aggatgtcgg agcccctgca gagtgtggtg 300
gaccacatgg ccacccacct tggggtgtcc ccaagcagga tccttttgct ttttggagag 360
acagagctat cacctactgc cactcccagg accctaaagc tcggagtggc tgacatcatt 420
gactgtgtgg tactaacaag ttctccagag gccacagaga cgtcccaaca gctccagctc 480
cgggtgcagg gaaaggagaa acaccagaca ctggaagtct cactgtctcg agattcccct 540
ctaaagaccc ttatgtccca ctatgaggag gccatgggac tgtcgggacg gaagctctcc 600
ttcttctttg atgggacaaa gctttcaggc agggagctgc cagctgacct gggcatggaa 660
tctggggacc tcattgaggt ctggggctga caccccactc cctgtttgac ggcccagcct 720
ggacttgggg agaatgactt tccctttttt gccccataag ggctagcata agctgaggta 780
gaacttatct ttaagctgca gcaaaatcaa ggagtgactt ttgtcccctc tcctgttgac 840
cctggtttag agccgttaac cacttggtga gttatgtggg tgttgttgcc ctgggtggcc 900
tgtggctccg tccacaagtc atgctgagtt ttgcagcctc tgtgacttgg agatgtccct 960
tcacccctcc cctttcacca ccatcctctt ttcctcatgg aaatgtctgc tttatgaaac 1020
```

```
tatgcacata ttgaaagtga gttgaaacaa atgagggttg ggtaggagct tccaggcctg 1080
ggatttacac cacgcctagc ccagcagagg ccttagtccc atttggggct tgggagtgac 1140
atttgcttga ggcttataca ctggtgtggt tgcctggctt gcaggaaatg accaagctca 1200
cacatgctgg ctgaagcgta agcagacaac tgaggtactc ttttgaagga tgaaggtggt 1260
ggattctcag ccctgggggt cttcctcacc tgaggaccct tcagagccac cctttctagt 1320
ttgcatttcc tggtgcacac atttaaggca taacagcaca ttcatccctt tggtttggga 1380
tctcaggaat acagtcccat gcaaagattc tctggtttta tggctttttt ccctttcttt 1440
acaccatcct ctcccataag cacccatgtc tttgaatatg aatgtatttg taaaatacca 1500
cgtttcatgt gtgaatatgt gctttactg tacatagtgc tattgtgcaa taggtcttat 1560
gctgttttca ctcaatgtgt gctaagatct agccccattg actcttctag aaatgcagta 1620
ttgctttgac ctgccatgtg gcactccaca atgtcaattg cagtttacac acattgccta 1680
aagtggggga cacctgggtg cccctgaccc cttggcaccg gatacaggcc acgataaaca 1740
tcctttcgtg tgttcccttc tgtgcttgtg tggcatgtgt acccaggatg ggcctatagg 1800
tcacagaggt cagtttctct ttggttttcc agattttctt tagaacggtg actgaccctc 1860
ctacttgagg ccgccctttt ctccttatcc ttgccagcac ttgtattgcc agactaccta 1920
atttttgcca gtctcatggg tagatagtgg tgcagtgctt taacatacat tcatctgatc 1980
agcattaatt tggggaattt tttcacttag cctttctggt ttcccttcct gtgcattgcc 2040
cattttctca tggagtttct tatctttttt ggtttattct caggagttgc ttgtacattc 2100
ttgggcaatt gcagataatt ccaagaatgc atatttgggc tgggtatgga ggttcactgg 2160
taatcccagc actttgggag gcccaggcag aaggatcgct gcagcccagg agttcgagac 2220
tagcctgggc aacatagcga gacctcgtct ctacaaaaaa aaattaaaaa ggggctttg 2280
ggaggccaag gcgggcagat catgagggca ggagattgag accctcctgg ccaacatggt 2340
gaaaccccgt ctctactaaa atacaaaaaa ttagctgggc atggtggcgc acacctgtag 2400
tcccagctac tctggaggct gaggcagggg aatcgcttaa acccaggagg cggagattgc 2460
agtgagccaa ggttccacca ctgcactcca gcctggcgac agagcaaggc tccactc    2517
```

<210> 78

<211> 138

<212> PRT

<213> Homo sapiens

<400> 78

```
Met Ser Glu Pro Leu Gln Ser Val Val Asp His Met Ala Thr His Leu
 1               5                  10                  15
Gly Val Ser Pro Ser Arg Ile Leu Leu Leu Phe Gly Glu Thr Glu Leu
```

```
                    20                  25                  30
Ser Pro Thr Ala Thr Pro Arg Thr Leu Lys Leu Gly Val Ala Asp Ile
                    35                  40                  45
Ile Asp Cys Val Val Leu Thr Ser Ser Pro Glu Ala Thr Glu Thr Ser
        50                  55                  60
Gln Gln Leu Gln Leu Arg Val Gln Gly Lys Glu Lys His Gln Thr Leu
    65                  70                  75                  80
Glu Val Ser Leu Ser Arg Asp Ser Pro Leu Lys Thr Leu Met Ser His
                    85                  90                  95
Tyr Glu Glu Ala Met Gly Leu Ser Gly Arg Lys Leu Ser Phe Phe Phe
                100                 105                 110
Asp Gly Thr Lys Leu Ser Gly Arg Glu Leu Pro Ala Asp Leu Gly Met
            115                 120                 125
Glu Ser Gly Asp Leu Ile Glu Val Trp Gly
            130                 135
```

<210> 79
<211> 2901
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (91)..(1974)

<400> 79

```
gcatttgcgg ccggcgccag ggtggagagt tgtgcgccgg tccctgggcc tgagctccgg 60
ctccggctgg ggcgcctgcg atgtctcaag atggcggagc tgggcgaatt aaagcacatg 120
gtgatgagtt tccgggtgtc tgagctccag gtgcttcttg gctttgctgg ccggaacaag 180
agtggacgga agcacgagct cctggccaag gctctgcacc tcctgaagtc cagctgtgcc 240
cctagtgtcc agatgaagat caaagagctt taccgacgac gctttccccg gaagaccctg 300
gggccctctg atctctccct tctctctttg cccccctggca cctctcctgt aggctcccct 360
ggtcctctag ctcccattcc cccaacgctg ttggcccctg gcaccctgct gggccccaag 420
cgtgaggtgg acatgcaccc ccctctgccc cagcctgtgc accctgatgt caccatgaaa 480
ccattgccct tctatgaagt ctatggggag ctcatccggc ccaccaccct tgcatccact 540
```

```
tctagccagc ggtttgagga agcgcacttt acctttgccc tcacacccca gcaagtgcag 600
cagattctta catccagaga ggttctgcca ggagccaaat gtgattatac catacaggtg 660
cagctaaggt tctgtctctg tgagaccagc tgcccccagg aagattattt tccccccaac 720
ctctttgtca aggtcaatgg gaaactgtgc cccctgccgg gttaccttcc cccaaccaag 780
aatggggccg agcccaagag gcccagccgc cccatcaaca tcacaccccc ggctcgactc 840
tcagccactg ttcccaacac cattgtggtc aattggtcat ctgagttcgg acggaattac 900
tccttgtctg tgtacctggt gaggcagttg actgcaggaa cccttctaca aaaactcaga 960
gcaaagggta tccggaaccc agaccactcg cgggcactga tcaaggagaa attgactgct 1020
gaccctgaca gtgaggtggc cactacaagt ctccgggtgt cactcatgtg cccgctaggg 1080
aagatgcgcc tgactgtccc ttgtcgtgcc ctcacctgcg cccacctgca gagcttcgat 1140
gctgcccttt atctacagat gaatgagaag aagcctacat ggacatgtcc tgtgtgtgac 1200
aagaaggctc cctatgaatc tcttatcatt gatggtttat ttatggagat tcttagttcc 1260
tgttcagatt gtgatgagat ccaattcatg gaagatggat cctggtgccc aatgaaaccc 1320
aagaaggagg catctgaggt ttgccccccg ccagggtatg ggctggatgg cctccagtac 1380
agcccagtcc agggggggaga tccatcagag aataagaaga aggtcgaagt tattgacttg 1440
acaatagaaa gctcatcaga tgaggaggat ctgcccccta ccaagaagca ctgttctgtc 1500
acctcagctg ccatcccggc cctacctgga agcaaaggag tcctgacatc tggccaccag 1560
ccatcctcgg tgctaaggag ccctgctatg ggcacgttgg gtggggattt cctgtccagt 1620
ctcccactac atgagtaccc acctgccttc ccactgggag ccgacatcca aggtttagat 1680
ttattttcat ttcttcagac agagagtcag cactatggcc cctctgtcat cacctcacta 1740
gatgaacagg atgcccttgg ccacttcttc cagtaccgag ggaccccttc tcactttctg 1800
ggcccactgg cccccacgct ggggagctcc cactgcagcg ccactccggc gccccctcct 1860
ggccgtgtca gcagcattgt ggcccctggg ggggccttga gggaggggca tggaggaccc 1920
ctgccctcag gtccctcttt gactggctgt cggtcagaca tcatttccct ggactgagtt 1980
ccctggatta tggaaacttc gctgtccccc aacactgagc aagtatgctg tggagtccca 2040
accccagcta ctctgatccc tctgggggct ctggccaagg gccagacaga ccttcacaga 2100
tgcctacttt tggcctcatc tctgcctgac aaggccagca cccaaagggt taatatttaa 2160
cctcttttta aggacactgg ggtctgtttc tggaaatgtt ctttagatgg tggcacattc 2220
ctttgggtat gttaacctag gcagtgggag gcaaatggga tggtatgtga gctaggagaa 2280
gggctgaacc ctcagccttg actatgtcta gagcctcttg gggaagggggc acctctcttg 2340
aaccccaaat gctctctctt cttattaccc aaacccatgg ctctatttct tcttcacatc 2400
cattgtctct tcatgtctat tccattccct tcggccaaac agacaggtg aaaaactgag 2460
acaggcagtt tcagagatgg acagagaact ttattttgga ttgtggatgt ggactttttt 2520
gtacataaat aagaaaaacc aaaatactcc aaagatgact tcccctgcct cctactccag 2580
tatgacagag gaggatgtaa ggccttagcc atgatctgca ggggtctggg agtcaggccc 2640
ggcctattgc ttgggtctct ctctatttat atatctaagt tcacagtgtt tcttattccc 2700
```

```
ccctaagctt ctagaggctc atggccctgt agttaggcct ggctcattct gcacctttcc 2760

agggaggtgg aaggaccctg tgccctcctt cccaatcttc tttttcaggc tcgccaaggc 2820

ctaggaccta tgttgtaatt ttacttttta tttctaaagt tgtagtgaag ctctcaccca 2880

taataaaggt tgtgaatgtt c                                     2901
```

<210> 80
<211> 628
<212> PRT
<213> Homo sapiens

<400> 80

```
Met Ala Glu Leu Gly Glu Leu Lys His Met Val Met Ser Phe Arg Val
1               5                   10                  15

Ser Glu Leu Gln Val Leu Leu Gly Phe Ala Gly Arg Asn Lys Ser Gly
                20                  25                  30

Arg Lys His Glu Leu Leu Ala Lys Ala Leu His Leu Leu Lys Ser Ser
            35                  40                  45

Cys Ala Pro Ser Val Gln Met Lys Ile Lys Glu Leu Tyr Arg Arg Arg
        50                  55                  60

Phe Pro Arg Lys Thr Leu Gly Pro Ser Asp Leu Ser Leu Leu Ser Leu
65                  70                  75                  80

Pro Pro Gly Thr Ser Pro Val Gly Ser Pro Gly Pro Leu Ala Pro Ile
                85                  90                  95

Pro Pro Thr Leu Leu Ala Pro Gly Thr Leu Leu Gly Pro Lys Arg Glu
                100                 105                 110

Val Asp Met His Pro Pro Leu Pro Gln Pro Val His Pro Asp Val Thr
            115                 120                 125

Met Lys Pro Leu Pro Phe Tyr Glu Val Tyr Gly Glu Leu Ile Arg Pro
        130                 135                 140

Thr Thr Leu Ala Ser Thr Ser Ser Gln Arg Phe Glu Glu Ala His Phe
145                 150                 155                 160

Thr Phe Ala Leu Thr Pro Gln Gln Val Gln Gln Ile Leu Thr Ser Arg
                165                 170                 175

Glu Val Leu Pro Gly Ala Lys Cys Asp Tyr Thr Ile Gln Val Gln Leu
                180                 185                 190
```

Arg Phe Cys Leu Cys Glu Thr Ser Cys Pro Gln Glu Asp Tyr Phe Pro
        195   200   205

Pro Asn Leu Phe Val Lys Val Asn Gly Lys Leu Cys Pro Leu Pro Gly
        210   215   220

Tyr Leu Pro Pro Thr Lys Asn Gly Ala Glu Pro Lys Arg Pro Ser Arg
225   230   235   240

Pro Ile Asn Ile Thr Pro Pro Ala Arg Leu Ser Ala Thr Val Pro Asn
            245   250   255

Thr Ile Val Val Asn Trp Ser Ser Glu Phe Gly Arg Asn Tyr Ser Leu
            260   265   270

Ser Val Tyr Leu Val Arg Gln Leu Thr Ala Gly Thr Leu Leu Gln Lys
        275   280   285

Leu Arg Ala Lys Gly Ile Arg Asn Pro Asp His Ser Arg Ala Leu Ile
        290   295   300

Lys Glu Lys Leu Thr Ala Asp Pro Asp Ser Glu Val Ala Thr Thr Ser
305   310   315   320

Leu Arg Val Ser Leu Met Cys Pro Leu Gly Lys Met Arg Leu Thr Val
            325   330   335

Pro Cys Arg Ala Leu Thr Cys Ala His Leu Gln Ser Phe Asp Ala Ala
            340   345   350

Leu Tyr Leu Gln Met Asn Glu Lys Lys Pro Thr Trp Thr Cys Pro Val
        355   360   365

Cys Asp Lys Lys Ala Pro Tyr Glu Ser Leu Ile Ile Asp Gly Leu Phe
        370   375   380

Met Glu Ile Leu Ser Ser Cys Ser Asp Cys Asp Glu Ile Gln Phe Met
385   390   395   400

Glu Asp Gly Ser Trp Cys Pro Met Lys Pro Lys Lys Glu Ala Ser Glu
            405   410   415

Val Cys Pro Pro Pro Gly Tyr Gly Leu Asp Gly Leu Gln Tyr Ser Pro
            420   425   430

Val Gln Gly Gly Asp Pro Ser Glu Asn Lys Lys Lys Val Glu Val Ile
        435   440   445

Asp Leu Thr Ile Glu Ser Ser Ser Asp Glu Glu Asp Leu Pro Pro Thr
        450   455   460

Lys Lys His Cys Ser Val Thr Ser Ala Ala Il Pro Ala Leu Pro Gly
465   470   475   480

```
Ser Lys Gly Val Leu Thr Ser Gly His Gln Pro Ser Ser Val Leu Arg
                485                 490                 495
Ser Pro Ala Met Gly Thr Leu Gly Gly Asp Phe Leu Ser Ser Leu Pro
                500                 505                 510
Leu His Glu Tyr Pro Pro Ala Phe Pro Leu Gly Ala Asp Ile Gln Gly
            515                 520                 525
Leu Asp Leu Phe Ser Phe Leu Gln Thr Glu Ser Gln His Tyr Gly Pro
        530                 535                 540
Ser Val Ile Thr Ser Leu Asp Glu Gln Asp Ala Leu Gly His Phe Phe
545                 550                 555                 560
Gln Tyr Arg Gly Thr Pro Ser His Phe Leu Gly Pro Leu Ala Pro Thr
                565                 570                 575
Leu Gly Ser Ser His Cys Ser Ala Thr Pro Ala Pro Pro Pro Gly Arg
                580                 585                 590
Val Ser Ser Ile Val Ala Pro Gly Gly Ala Leu Arg Glu Gly His Gly
            595                 600                 605
Gly Pro Leu Pro Ser Gly Pro Ser Leu Thr Gly Cys Arg Ser Asp Ile
        610                 615                 620
Ile Ser Leu Asp
625
```

<210> 81
<211> 2130
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (186)..(1262)

<400> 81

```
aagcgcgttc ccggcagctg cgggctccga ggccagagag aaaagactgc gaggtggccg   60
cagctgtggc cggagagcac aaagaatgaa ccagcagtgg aagagaaaat actgtaagct  120
ggctgactgc tggtgaagaa aatgctttat ttttgtggca ggcatctgtg ggatctgtaa  180
tagaaatgat ggctggctgt ggtgaaattg atcattcaat aaacatgctt cctacaaaca  240
```

```
ggaaagcgaa cgagtcctgt tctaatactg caccttcttt aaccgtccct gaatgtgcca 300
tttgtctgca aacatgtgtt catccagtca gtctgccctg taagcacgtt ttctgctatc 360
tatgtgtaaa aggagcttca tggcttggaa agcggtgtgc tctttgtcga caagaaattc 420
ccgaggattt ccttgacaag ccaaccttgt tgtcaccaga agaactcaag gcagcaagta 480
gaggaaatgg tgaatatgca tggtattatg aaggaagaaa tgggtggtgg cagtacgatg 540
agcgcactag tagagagctg gaagatgctt tttccaaagg taaaaagaac actgaaatgt 600
taattgctgg ctttctgtat gtcgctgatc ttgaaaacat ggttcaatat aggagaaatg 660
aacatggacg tcgcaggaag attaagcgag atataataga tataccaaag aagggagtag 720
ctggacttag gctagactgt gatgctaata ccgtaaacct agcaagagag agctctgctg 780
acggagcgga cagtgtatca gcacagagtg gagcttctgt tcagcccta gtgtcttctg 840
taaggcccct aacatcagta gatggtcagt taacaagccc tgcaacacca tccctgatg 900
caagcacttc tctggaagac tcttttgctc atttacaact cagtggagac aacacagctg 960
aaaggagtca taggggagaa ggagaagaag atcatgaatc accatcttca ggcagggtac 1020
cagcaccaga cacctccatt gaagaaactg aatcagatgc cagtagtgat agtgaggatg 1080
tatctgcagt tgttgcacag cactccttga cccaacagag actttttggtt tctaatgcaa 1140
accagacagt acccgatcga tcagatcgat cgggaactga tcgatcagta gcaggggggtg 1200
gaacagtgag tgtcagtgtc agatctagaa ggcctgatgg acagtgcaca gtaactgaag 1260
tttaaataaa aatgtcttca gctccatgct caaggttgaa agggttacct gtaaatttct 1320
gcccacataa cattatactc atccctagta gtgcattttg ggagttgggg tgggaagggg 1380
tatgggaagg atagactcat aattaaaatg tctaacatgt ctctgttgag aaatttattt 1440
aatgtaagga acttgggtgt taatagttga gagctgttta gtaataaccc agttttcttg 1500
aggtctgttt actttatact ttttaaaaac ttctgtagtt cttttggcca gtgtgtttgt 1560
attatctgtg cattaatggt cctcatctga ctcctgcatt gtgtcttatt tttctgcatg 1620
gattggcata agaccattac taaaatttgg cacctgtgag atgtttgata ttatgaacag 1680
gaaacataat ttaatgtatg aatagatgtg aatttgggat ttcaaaatag atgaataaca 1740
actattttat agtaaagtta ttgaaatgga aatgaaaaca gccagtaact tatgtttcag 1800
aatgtttgta acacacttca tggtgttccc ataggctttg ctgtctagtc ttatagtttg 1860
aggttttttt ggtctgcatt tttcttttttg attacaaaat ttataattta ataaatacta 1920
gagtttatca aaaacagttt gtctcttgtt tgagggtgga aagggtgtgg aaacatttttg 1980
acatttgtga ccaaaggtca cttaaaaagt ggtggtttta attggttgtt ttcagcttaa 2040
tcacctgctc agaaaagttt gatttttttc ttagagatta tttaaacaga atctataggc 2100
agtgtgtata taataaacat gtatggaaat                                   2130
```

<210> 82
<211> 359

<212> PRT

<213> Homo sapiens

<400> 82

```
Met Met Ala Gly Cys Gly Glu Ile Asp His Ser Ile Asn Met Leu Pro
 1               5                  10                  15
Thr Asn Arg Lys Ala Asn Glu Ser Cys Ser Asn Thr Ala Pro Ser Leu
                20                  25                  30
Thr Val Pro Glu Cys Ala Ile Cys Leu Gln Thr Cys Val His Pro Val
                35                  40                  45
Ser Leu Pro Cys Lys His Val Phe Cys Tyr Leu Cys Val Lys Gly Ala
            50                  55                  60
Ser Trp Leu Gly Lys Arg Cys Ala Leu Cys Arg Gln Glu Ile Pro Glu
65                  70                  75                  80
Asp Phe Leu Asp Lys Pro Thr Leu Leu Ser Pro Glu Glu Leu Lys Ala
                85                  90                  95
Ala Ser Arg Gly Asn Gly Glu Tyr Ala Trp Tyr Tyr Glu Gly Arg Asn
                100                 105                 110
Gly Trp Trp Gln Tyr Asp Glu Arg Thr Ser Arg Glu Leu Glu Asp Ala
            115                 120                 125
Phe Ser Lys Gly Lys Lys Asn Thr Glu Met Leu Ile Ala Gly Phe Leu
            130                 135                 140
Tyr Val Ala Asp Leu Glu Asn Met Val Gln Tyr Arg Arg Asn Glu His
145                 150                 155                 160
Gly Arg Arg Arg Lys Ile Lys Arg Asp Ile Ile Asp Ile Pro Lys Lys
                165                 170                 175
Gly Val Ala Gly Leu Arg Leu Asp Cys Asp Ala Asn Thr Val Asn Leu
            180                 185                 190
Ala Arg Glu Ser Ser Ala Asp Gly Ala Asp Ser Val Ser Ala Gln Ser
            195                 200                 205
Gly Ala Ser Val Gln Pro Leu Val Ser Ser Val Arg Pro Leu Thr Ser
            210                 215                 220
Val Asp Gly Gln Leu Thr Ser Pro Ala Thr Pro Ser Pro Asp Ala Ser
225                 230                 235                 240
Thr Ser Leu Glu Asp Ser Phe Ala His Leu Gln Leu Ser Gly Asp Asn
                245                 250                 255
```

Thr Ala Glu Arg Ser His Arg Gly Glu Gly Glu Glu Asp His Glu Ser
            260   265   270

Pro Ser Ser Gly Arg Val Pro Ala Pro Asp Thr Ser Ile Glu Glu Thr
            275   280   285

Glu Ser Asp Ala Ser Ser Asp Ser Glu Asp Val Ser Ala Val Val Ala
            290   295   300

Gln His Ser Leu Thr Gln Gln Arg Leu Leu Val Ser Asn Ala Asn Gln
305   310   315   320

Thr Val Pro Asp Arg Ser Asp Arg Ser Gly Thr Asp Arg Ser Val Ala
                325   330   335

Gly Gly Gly Thr Val Ser Val Ser Val Arg Ser Arg Arg Pro Asp Gly
            340   345   350

Gln Cys Thr Val Thr Glu Val
            355

<210> 83
<211> 2748
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (250)..(1011)

<400> 83
agactgctgt gctagcaatc agcgagattc cgtgggcgta ggaccctctg agccaggtgt 60
gggatatagt ctcgtggtgc gccgtttctt aagccggtct gaaaagcgca atattcggat 120
gggagtgacc cgattttcca ggaactgaag ttaaaagatg aagaatgtga gaggctttca 180
aaagtgcgag atcaacttgg acaggaattg gaagaactca cagctagtct atttgaggaa 240
gctcataaaa tggtgagaga agcaaatatc aagcaggcaa cagcagaaaa acagctaaaa 300
gaagcacaag gaaaaattga tgtacttcaa gctgaagtag ctgcattgaa gacacttgta 360
ttgtccagtt ctccaacatc acctacgcag gagcctttgc caggtggaaa gacacctttt 420
aaaaaggggc atacaagaaa taaaagcaca agcagtgcta tgagtggcag tcatcaggac 480
ctcagtgtga tacagccaat tgtaaaagac tgcaaagagg ctgacttatc cttgtataat 540
gaattccgat tgtggaagga tgagcccaca atggacagga cgtgtccttt cttagacaaa 600

```
atctaccagg aagatatctt tccatgttta acattctcaa aaagtgagtt ggcttcagct 660
gttctggagg ctgtggaaaa caatactcta agcattgaac cagtgggatt acaacctatc 720
cggtttgtga aagcttctgc agttgaatgc ggaggaccaa aaaaatgtgc tctcactggc 780
cagagtaagt cctgtaaaca cagaattaaa ttaggggact caagcaacta ttattatatt 840
tctccttttt gcagatacag gatcacttct gtatgtaact tttttacata cattcgatac 900
attcagcagg gactcgtgaa acagcaggat gttgatcaga tgttttggga ggttatgcag 960
ttgagaaaag agatgtcatt ggcaaagctg ggttatttca aagaggaact ctgatgctct 1020
gcgtgggacc atgcctgaac tccccgaata actgaaaaat ggctgaatat ttttatggtt 1080
acttgatatt tatttccaag gagtgagcct aagacttttt tccccttttg caaattgctc 1140
taagaagtac catgatttct tttaaactga tctatgctgt gtttgcttat tctttagttg 1200
aacacactat gaagaattcc aggtgtacta gtgaatgtaa tttatagttg ccaaaaaaaa 1260
acaaacctga aataaataaa tgttagattg aatgtgtgta catttctct tctagctctg 1320
acatggcatt tagggttagc agaatgtatt aaatagtaat tttcaaacta cacagtagct 1380
tccttccttg tgagaggcaa gaaagaagtc tgagtggata gtactcactt tccaaggccc 1440
ccacctctag aatggcttta tttttatctg ttttctatat tgggtttcaa aaaagatttt 1500
atttgaagaa atacttctgc tgctacaaag tttgaaagtt actattttaa ttattctgct 1560
ctctgtaact gaaagaatcc cttattttg gttattcatt aaaatataat agaaggcagt 1620
cagattttat cccagagatg tattcctgag tgtcttgata tagtgtattc atgtttata 1680
tgtgttgacc actatattgt cattggaggg acatagatgt aaatgagttt gacgtgtgtc 1740
aaaggggttt aaaggggtgt ggattgaatg aatggtacgt gcgaagtata tgctgattat 1800
agaaccactt gatctctgca ttccaaattg taaaactgac tcaactggag aaattataac 1860
aaagaggttt gtggtagaaa tgtaataagt atagaaaagc aaaaagaaaa gagaaactgc 1920
tttagtttct gtttagagaa agctgctgtt aatattttg gatagtagcc tttcagcttt 1980
cagatatttt ctacttacat atgcatattt ttgaaacaaa aagtaggctt ttttttttgct 2040
ttttaaacct aaacattaaa tatattttcc cttgggtaaa cctacacatc ctaatccctg 2100
tttatagaat tttaacataa tttaattgtg tttggagatg aggtggtttt cagtttattt 2160
ttcatattat aatgctgtga cgagtatcct tatctgtaca cttctgaaca ttgtggagtt 2220
ctttcatgtg gatgcctgga gataaaattg tgtcgagata tatatgtatt tttaaatgtt 2280
tgatctgcat tgctagattg ccatccagaa aagttaatca atttgtattc acagcagcag 2340
tgtacaagag ggctggtttt ctgaagataa cattttttc agtcctgttc agaggtttgg 2400
tcaatcttac ctgtagatga cttcagccac caggctggat gggagcccac agacaaaagg 2460
acattggtgt atgttatggt gaaaaccatc agtaccatgc ctagctcaag aatgtgaaat 2520
tgaacctgaa aaaaactttg aacctacaat tttatgttct gaaaatagtt attctaatgt 2580
gagggcatta ataagaatat gtaccatcaa agcatcagaa gattttccat acaaactaaa 2640
atcacttttg gagaaagtac ctaaataaaa agagaaacaa atccaggaga tactgtacgg 2700
tttgaaagaa aggtaatcaa atactcagaa aaagtttgtt gatgactt          2748
```

<210> 84

<211> 254

<212> PRT

<213> Homo sapiens

<400> 84

Met Val Arg Glu Ala Asn Ile Lys Gln Ala Thr Ala Glu Lys Gln Leu
1   5   10   15

Lys Glu Ala Gln Gly Lys Ile Asp Val Leu Gln Ala Glu Val Ala Ala
                20   25   30

Leu Lys Thr Leu Val Leu Ser Ser Ser Pro Thr Ser Pro Thr Gln Glu
            35   40   45

Pro Leu Pro Gly Gly Lys Thr Pro Phe Lys Lys Gly His Thr Arg Asn
        50   55   60

Lys Ser Thr Ser Ser Ala Met Ser Gly Ser His Gln Asp Leu Ser Val
65   70   75   80

Ile Gln Pro Ile Val Lys Asp Cys Lys Glu Ala Asp Leu Ser Leu Tyr
                85   90   95

Asn Glu Phe Arg Leu Trp Lys Asp Glu Pro Thr Met Asp Arg Thr Cys
                100   105   110

Pro Phe Leu Asp Lys Ile Tyr Gln Glu Asp Ile Phe Pro Cys Leu Thr
            115   120   125

Phe Ser Lys Ser Glu Leu Ala Ser Ala Val Leu Glu Ala Val Glu Asn
            130   135   140

Asn Thr Leu Ser Ile Glu Pro Val Gly Leu Gln Pro Ile Arg Phe Val
145   150   155   160

Lys Ala Ser Ala Val Glu Cys Gly Gly Pro Lys Lys Cys Ala Leu Thr
                165   170   175

Gly Gln Ser Lys Ser Cys Lys His Arg Ile Lys Leu Gly Asp Ser Ser
                180   185   190

Asn Tyr Tyr Tyr Ile Ser Pro Phe Cys Arg Tyr Arg Ile Thr Ser Val
            195   200   205

Cys Asn Phe Phe Thr Tyr Ile Arg Tyr Ile Gln Gln Gly Leu Val Lys
        210   215   220

Gln Gln Asp Val Asp Gln Met Phe Trp Glu Val Met Gln Leu Arg Lys
225   230   235   240
Glu Met Ser Leu Ala Lys Leu Gly Tyr Phe Lys Glu Glu Leu
                245   250

<210> 85
<211> 2944
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (265)..(2031)

<400> 85
gtggctgctg cggatgtcgg tgtgagcgag cggcgcctga acacacggcg gctgccgagc 60
gcctgacccg ggcctgcgcc agagcctgca ccgagctccg gggcccaca cccgctacgg 120
tggccctgcg cccgttgcta ctgaggcggc gtgctctgca ttcttcgctg tccaggcctg 180
ccggctctgg tgtctgctgg ctcctccttg ctcgcctgct ccctcctgct tgcctgagtc 240
accgccgccg ccgccgccac agccatggcc gagagtggtg aaagcggcgg tcctccgggc 300
tcccaggata gcgccgccgg agccgaaggt gctggcgccc cgcggccgc tgcctccgcg 360
gagcccaaaa tcatgaaagt caccgtgaag accccgaagg aaaaggagga attcgccgtg 420
cccgagaata gctccgtcca gcagtttaag gaagaaatct ctaaacgttt taaatcacat 480
actgaccaac ttgtgttgat atttgctgga aaaattttga agatcaaga taccttgagt 540
cagcatggaa ttcatgatgg acttactgtt caccttgtca ttaaaacaca aaacaggcct 600
caggatcatt cagctcagca aacaaataca gctggaagca atgttactac atcatcaact 660
cctaatagta actctacatc tggttctgct actagcaacc cttttggttt aggtggcctt 720
gggggacttg caggtctgag tagcttgggt ttgaatacta ccaacttctc tgaactacag 780
agtcagatgc agcgacaact tttgtctaac cctgaaatga tggtccagat catggaaaat 840
ccctttgttc agagcatgct ctcaaatcct gacctgatga gacagttaat tatggccaat 900
ccacaaatgc agcagttgat acagagaaat ccagaaatta gtcatatgtt gaataatcca 960
gatataatga gacaaacgtt ggaacttgcc aggaatccag caatgatgca ggagatgatg 1020
aggaaccagg accgagcttt gagcaaccta gaaagcatcc caggggggata taatgcttta 1080
aggcgcatgt acacagatat tcaggaacca atgctgagtg ctgcacaaga gcagtttggt 1140
ggtaatccat ttgcttcctt ggtgagcaat acatcctctg gtgaaggtag tcaaccttcc 1200

cgtacagaaa atagagatcc actacccaat ccatgggctc cacagacttc ccagagttca 1260

tcagcttcca gcggcactgc cagcactgtg ggtggcacta ctggtagtac tgccagtggc 1320

acttctgggc agagtactac tgcgccaaat ttggtgcctg gagtaggagc tagtatgttc 1380

aacacaccag gaatgcagag cttgttgcaa caaataactg aaaacccaca actgatgcaa 1440

aacatgttgt ctgcccccta catgagaagc atgatgcagt cactaagcca gaatcctgac 1500

cttgctgcac agatgatgct gaataatccc ctatttgctg gaaatcctca gcttcaagaa 1560

caaatgagac aacagctccc aactttcctc caacaaatgc ggaatcctga tacactatca 1620

gcaatgtcaa accctagagc aatgcaggcc ttgttacaga ttcagcaggg tttacagaca 1680

ttagcaacgg aagccccggg ccttatccca gggtttactc ctggcttggg ggcattagga 1740

agcactggag gctcttcggg aactaatgga tctaacgcca cacctagtga aaacacaagt 1800

cccacagcag gaaccactga acctggacat cagcagttta ttcagcagat gctgcaggct 1860

cttgctggag taaatcctca gctacagaat ccagaagtca gatttcagca acaactggaa 1920

caactcagtg caatgggatt tttgaaccgt gaagcaaact tgcaagctct aatagcaaca 1980

ggaggtgata tcaatgcagc tattgaaagg ttactgggct cccagccatc atagcagcat 2040

ttctgtatct tgaaaaaatg taatttattt ttgataacgg ctcttaaact ttaaaatacc 2100

tgctttattt cattttgact cttggaattc tgtgctgtta taaacaaacc caatatgatg 2160

cattttaagg tggagtacag taagatgtgt gggtttttct gtatttttct tttctggaac 2220

agtgggaatt aaggctactg catgcatcac ttctgcattt attgtaattt tttaaaaaca 2280

tcacctttta tagttgggtg accagatttt gtcctgcatc tgtccagttt atttgctttt 2340

taaacattag cctatggtag taatttatgt agaataaaag cattaaaaag aagcaaatca 2400

tttgcactct ataatttgtg gtacagtatt gcttattgtg actttggcat gcatttttgc 2460

aaacaatgct gtaagattta tactactgat aattttgttt tatttgtata caatatagag 2520

tatgcacatt tgggactgca tttctggaaa catactgcaa taggctctct gagcaaaaca 2580

cctgtaacta aaaaagtgaa gataagaaaa tactcttaaa gctgagtatt tcctaattgt 2640

atagaatctt acagcatctt tgacaaacat ctcccagcaa aagtgccggt tagtcaggtt 2700

tgttgaaaat acagtagaaa agctgattct ggttatctct ttaaggacaa ttaattgtac 2760

agacacataa tgtaacattg tctcaacatt cattcacaga ttgactgtaa attaccttaa 2820

tctttgtgca gactgaagga acactgtagt ataccccaaa gtgcatttgc ctaggacttc 2880

tcagcttctc ccataggtag tttaacaggc attaaaattt gtaattgaaa tgttgctttc 2940

actg   2944

<210> 86

<211> 589

<212> PRT

<213> Homo sapiens

<400> 86

Met Ala Glu Ser Gly Glu Ser Gly Gly Pro Pro Gly Ser Gln Asp Ser
1   5   10   15

Ala Ala Gly Ala Glu Gly Ala Gly Ala Pro Ala Ala Ala Ala Ser Ala
                20   25   30

Glu Pro Lys Ile Met Lys Val Thr Val Lys Thr Pro Lys Glu Lys Glu
            35   40   45

Glu Phe Ala Val Pro Glu Asn Ser Ser Val Gln Gln Phe Lys Glu Glu
        50   55   60

Ile Ser Lys Arg Phe Lys Ser His Thr Asp Gln Leu Val Leu Ile Phe
65   70   75   80

Ala Gly Lys Ile Leu Lys Asp Gln Asp Thr Leu Ser Gln His Gly Ile
                85   90   95

His Asp Gly Leu Thr Val His Leu Val Ile Lys Thr Gln Asn Arg Pro
                100   105   110

Gln Asp His Ser Ala Gln Gln Thr Asn Thr Ala Gly Ser Asn Val Thr
            115   120   125

Thr Ser Ser Thr Pro Asn Ser Asn Ser Thr Ser Gly Ser Ala Thr Ser
        130   135   140

Asn Pro Phe Gly Leu Gly Gly Leu Gly Gly Leu Ala Gly Leu Ser Ser
145   150   155   160

Leu Gly Leu Asn Thr Thr Asn Phe Ser Glu Leu Gln Ser Gln Met Gln
                165   170   175

Arg Gln Leu Leu Ser Asn Pro Glu Met Met Val Gln Ile Met Glu Asn
                180   185   190

Pro Phe Val Gln Ser Met Leu Ser Asn Pro Asp Leu Met Arg Gln Leu
        195   200   205

Ile Met Ala Asn Pro Gln Met Gln Gln Leu Ile Gln Arg Asn Pro Glu
    210   215   220

Ile Ser His Met Leu Asn Asn Pro Asp Ile Met Arg Gln Thr Leu Glu
225   230   235   240

Leu Ala Arg Asn Pro Ala Met Met Gln Glu Met Met Arg Asn Gln Asp
                245   250   255

Arg Ala Leu Ser Asn Leu Glu Ser Ile Pro Gly Gly Tyr Asn Ala Leu
            260   265   270

Arg Arg Met Tyr Thr Asp Ile Gln Glu Pro Met Leu Ser Ala Ala Gln
        275   280   285

Glu Gln Phe Gly Gly Asn Pro Phe Ala Ser Leu Val Ser Asn Thr Ser
      290   295   300

Ser Gly Glu Gly Ser Gln Pro Ser Arg Thr Glu Asn Arg Asp Pro Leu
305   310   315   320

Pro Asn Pro Trp Ala Pro Gln Thr Ser Gln Ser Ser Ser Ala Ser Ser
              325   330   335

Gly Thr Ala Ser Thr Val Gly Gly Thr Thr Gly Ser Thr Ala Ser Gly
            340   345   350

Thr Ser Gly Gln Ser Thr Thr Ala Pro Asn Leu Val Pro Gly Val Gly
      355   360   365

Ala Ser Met Phe Asn Thr Pro Gly Met Gln Ser Leu Leu Gln Gln Ile
      370   375   380

Thr Glu Asn Pro Gln Leu Met Gln Asn Met Leu Ser Ala Pro Tyr Met
385   390   395   400

Arg Ser Met Met Gln Ser Leu Ser Gln Asn Pro Asp Leu Ala Ala Gln
            405   410   415

Met Met Leu Asn Asn Pro Leu Phe Ala Gly Asn Pro Gln Leu Gln Glu
            420   425   430

Gln Met Arg Gln Gln Leu Pro Thr Phe Leu Gln Gln Met Arg Asn Pro
            435   440   445

Asp Thr Leu Ser Ala Met Ser Asn Pro Arg Ala Met Gln Ala Leu Leu
      450   455   460

Gln Ile Gln Gln Gly Leu Gln Thr Leu Ala Thr Glu Ala Pro Gly Leu
465   470   475   480

Ile Pro Gly Phe Thr Pro Gly Leu Gly Ala Leu Gly Ser Thr Gly Gly
            485   490   495

Ser Ser Gly Thr Asn Gly Ser Asn Ala Thr Pro Ser Glu Asn Thr Ser
            500   505   510

Pro Thr Ala Gly Thr Thr Glu Pro Gly His Gln Gln Phe Ile Gln Gln
            515   520   525

Met Leu Gln Ala Leu Ala Gly Val Asn Pro Gln Leu Gln Asn Pro Glu
      530   535   540

Val Arg Phe Gln Gln Gln Leu Glu Gln Leu Ser Ala Met Gly Phe Leu
545   550   555   560

Asn Arg Glu Ala Asn Leu Gln Ala Leu Ile Ala Thr Gly Gly Asp Ile
            565   570   575
Asn Ala Ala Ile Glu Arg Leu Leu Gly Ser Gln Pro Ser
            580   585

<210> 87

<211> 2160

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (197)..(496)

<400> 87

```
gtctttctct gtctcggctg aggcagccat ctttctcttg ccgcgtgctg gtgttggagg 60
accctccctg cttcagggta cagctcgcag aaagaagaag gtggtacata gaacagccac 120
agctgatgac aaaaagcttc agagttctct aaaaaaactg gctgtgaata atatagctgg 180
tattgaagag gtgaacatga ttaaagatga tgggacagtt attcatttca acaatcccaa 240
agtccaagct tccctttctg ctaatacctt tgcaattact ggtcatgcag aagccaaacc 300
aatcacagaa atgcttcctg gaatattaag tcagcttggt gctgacagtt taacaagcct 360
taggaagtta gctgaacagt tcccacggca agtcttggac agtaaagcac caaaaccaga 420
agacattgat gaggaagatg atgatgttcc agatcttgta gaaaattttg atgaggcatc 480
aaagaatgaa gctaactaaa agtttggttt ttggaagctg gcatggacta gatttaacaa 540
atcagctatg tggttccaaa gttttacaga catggagaac atcacctgtt actagttcag 600
taatataaat attttgtata ttaataatgc tgtttgttca gcatttttcg gtcatttgat 660
tttgcatttt gcacttcctc ccaggatatt tttttggtca aaatatgaag tattggtgca 720
gtttgagggt gttttggttt ttgattcctg gtttttttgt tttttgtttg gggtattttt 780
ggtgtatgta tgtttatgta tgtgtgtggg tatgtgtgta tacagtggag agcaaattgg 840
aaaacagttc tatttatcct cctccctccc cagtagaaat aaaaaaaaat ctttacattt 900
gttacttttc ttttcccccc gtaagacaca gaattaatgg aaagtgagta tcttggattt 960
caaatctgaa gagattttta ccattagtgg tttgatttta atttgcttgg ttaactatca 1020
tatttttcat acacttctct ggatttaaaa tatcttgagg tattttgcca ctggcttcat 1080
gctggagtaa tgggtaacat atctttggta tggttgcctt agattaactt acctagtcag 1140
acccagaaga acttctttta ctagcttgct tcctaaatgc ctttttcct ctccttttgg 1200
```

```
tctccaaatg gcctggtcag ctttttggtaa tattcttcct catcttccac ctagcttgag 1260
aaggatgttc tccatataga gtttagcgag tgcctaatcc ctccttttgt aagattttgt 1320
tccctcagct tgaggaacaa cttcatcttc aactttttat ttctccctga tgttacagtt 1380
tggtagattt caaactggaa tagctagcat gtgcttgcta aataatttta tgccagcctt 1440
atcctgtatc ctagctgttc ttaacagcag gtacaaaaat gcctgttttt cagcaaggtt 1500
gaaattggga atgtcctttt gaatcagaag aaaataggcc atagactcat ctcccagcac 1560
aaatgggcat tctatgaaat ggtactggcc ctaggaggat ttcctcaacc actctcctac 1620
tcttggcctt gaacctacct ctgggttgga tcttactatt gtagctgctc actataccct 1680
cctgcatgct tagaataatg ctttgagggg agcactggta aaacacagta tttatttttt 1740
tacctccttt aagaggactt ggaggtaagt tgcattcatt cactcaagtt tccctcttgc 1800
tgtctaatag aagcttactt tttgctatat cagcatttgt tacagccaat atttaaggac 1860
aaaatttaga aaatatatca tttcctggcc catcatcaaa ctaatacagc ttaaccttgc 1920
agctaccaac ttttgtgtca agctagatat ctttatttga tatctaaggt gcaagaccaa 1980
caatatatta agagatctgt agacatgaag gcaaagctct tgtatttttt ttcatccaaa 2040
cacctcaatt tattttataa attcgttcat ttttcctgtt atgttttata taatatatgg 2100
actaaacaaa ataaaataac agtgcaaaag aggagaatat ttcctcttgt gcttttcttg 2160
```

<210> 88
<211> 100
<212> PRT
<213> Homo sapiens

<400> 88

```
Met Ile Lys Asp Asp Gly Thr Val Ile His Phe Asn Asn Pro Lys Val
1               5                   10                  15
Gln Ala Ser Leu Ser Ala Asn Thr Phe Ala Ile Thr Gly His Ala Glu
                20                  25                  30
Ala Lys Pro Ile Thr Glu Met Leu Pro Gly Ile Leu Ser Gln Leu Gly
            35                  40                  45
Ala Asp Ser Leu Thr Ser Leu Arg Lys Leu Ala Glu Gln Phe Pro Arg
        50                  55                  60
Gln Val Leu Asp Ser Lys Ala Pro Lys Pro Glu Asp Ile Asp Glu Glu
65                  70                  75                  80
Asp Asp Asp Val Pro Asp Leu Val Glu Asn Phe Asp Glu Ala Ser Lys
                85                  90                  95
```

Asn Glu Ala Asn
                100

<210> 89
<211> 2551
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (42)..(1883)

<400> 89

```
tagacaaagg aaaatgcaaa aagcgaggcg acggcttaaa gatggagaac gaccccccagg 60
aggcggagtc tgaaatggcc ctggatgctg agttcctgga cgtgtacaag aactgcaacg 120
gggtggtcat gatgttcgac attaccaagc agtggacctt caattacatt ctccgggagc 180
ttccaaaagt gcccacccac gtgccagtgt gcgtgctggg aaactaccgg gacatgggcg 240
agcaccgagt catcctgccg gacgacgtgc gtgacttcat cgacaacctg gacagacctc 300
caggttcctc ctacttccgc tatgctgagt cttccatgaa gaacagcttc ggcctaaagt 360
accttcataa gttcttcaat atcccatttt tgcagcttca gagggagacg ctgttgcggc 420
agctggagac gaaccagctg gacatggacg ccacgctgga ggagctgtcg gtgcagcagg 480
agacggagga ccagaactac ggcatcttcc tggagatgat ggaggctcgc agccgtggcc 540
atgcgtcccc actggcggcc aacgggcaga gcccatcccc gggctcccag tcaccagtgg 600
tgcctgcagg cgctgtgtcc acggggagct ccagccccgg cacaccccag cccgcccccac 660
agctgcccct caatgctgcc ccaccatcct ctgtgccccc tgtaccaccc tcagaggccc 720
tgcccccacc tgcgtgcccc tcagcccccg ccccacggcg cagcatcatc tctaggctgt 780
ttgggacgtc acctgccacc gaggcagccc ctccacctcc agagccagtc ccggccgcac 840
agggcccagc aacggtccag agtgtggagg actttgttcc tgacgaccgc ctggaccgca 900
gcttcctgga agacacaacc cccgccaggg acgagaagaa ggtgggggcc aaggctgccc 960
agcaggacag cgacagtgat ggggaggccc tgggcggcaa cccgatggtg gcagggttcc 1020
aggacgatgt ggacctcgaa gaccagccac gtgggagtcc cccgctgcct gcaggccccg 1080
tccccagtca agacatcact ctttcgagtg aggaggaagc agaagtggca gctcccacaa 1140
aaggccctgc cccagctccc cagcagtgct cagagccaga gaccaagtgg tcctccatac 1200
cagcttcgaa gccacggagg gggacagctc ccacgaggac cgcagcaccc ccctggccag 1260
gcggtgtctc tgttcgcaca ggtccggaga agcgcagcag caccaggccc cctgctgaga 1320
```

tggagccggg gaagggtgag caggcctcct cgtcggagag tgaccccgag ggacccattg 1380

ctgcacaaat gctgtccttc gtcatggatg accccgactt tgagagcgag ggatcagaca 1440

cacagcgcag ggcggatgac tttcccgtgc gagatgaccc ctccgatgtg actgacgagg 1500

atgagggccc tgccgagccg cccccacccc ccaagctccc tctccccgcc ttcagactga 1560

agaatgactc ggacctcttc gggctggggc tggaggaggc cggacccaag gagagcagtg 1620

aggaaggtaa ggagggcaaa acccctctca aggagaagaa gaagaagaag aaaaaaggca 1680

aagaggaaga agaaaaagct gccaagaaga gagcaaaca caagaagagc aaggacaagg 1740

aggagggcaa ggaggagcgg cgacggcggc agcagcggcc cccgcgcagc agggagagga 1800

cggctgccga tgagctggag gctttcctgg ggggcggggc cccgggcggc cgccaccctg 1860

ggggtggcga ctacgaggag ctctaggccg gcgtgggcag tggccgccct ggggcggggg 1920

gcgtgcctgt cactgcctgg ggaggcattt gcctctgtac catcgccttt gccgctgccc 1980

cgtggctgcc gtgtgcgctt ctgagctgga agaggccggg cattggtggt ccccaggctg 2040

ggccctgcag gtgctgggcc ttcaggccca gtgtgagcct gctctgcaag aagggagggg 2100

acagctggct tcagccaggc tcggtggaca ccctggccct ctcggggcag agccgccagt 2160

gtttctcagg gatgtgactg aggcccagga gggacctgtg agggtctgtt tacagaggct 2220

gggcaggggc cgcttggctg tggggtgtgc gctgcccccgg cacctgcttg ccctccgcgc 2280

tcatctgggg ccgcagcatg cctatggttc cgcttccggc cgggagccct gaacacgggt 2340

gtgcagactc accctaaagg gcggcccagg ccccacgcta gaaggctggc gagaccgaag 2400

gcagcatgtg aggcctctcc tgggagtggg ggttgtgttt cccacagtgg cctcagctgc 2460

gcccccgctc aggtgagccc gaaggcagga gccgggaggc actcctccca aacactccac 2520

tcagaccata aagcactcct gtttcactct g   2551

<210> 90

<211> 614

<212> PRT

<213> Homo sapiens

<400> 90

```
Met Glu Asn Asp Pro Gln Glu Ala Glu Ser Glu Met Ala Leu Asp Ala
1               5                   10                  15

Glu Phe Leu Asp Val Tyr Lys Asn Cys Asn Gly Val Val Met Met Phe
                20                  25                  30

Asp Ile Thr Lys Gln Trp Thr Phe Asn Tyr Ile Leu Arg Glu Leu Pro
            35                  40                  45

Lys Val Pro Thr His Val Pro Val Cys Val Leu Gly Asn Tyr Arg Asp
```

```
             50                    ·55                    60
Met Gly Glu His Arg Val Ile Leu Pro Asp Asp Val Arg Asp Phe Ile
 65                    70                    75                    80
Asp Asn Leu Asp Arg Pro Pro Gly Ser Ser Tyr Phe Arg Tyr Ala Glu
                      85                    90                    95
Ser Ser Met Lys Asn Ser Phe Gly Leu Lys Tyr Leu His Lys Phe Phe
                     100                   105                   110
Asn Ile Pro Phe Leu Gln Leu Gln Arg Glu Thr Leu Leu Arg Gln Leu
                     115                   120                   125
Glu Thr Asn Gln Leu Asp Met Asp Ala Thr Leu Glu Glu Leu Ser Val
                130                   135                   140
Gln Gln Glu Thr Glu Asp Gln Asn Tyr Gly Ile Phe Leu Glu Met Met
145                   150                   155                   160
Glu Ala Arg Ser Arg Gly His Ala Ser Pro Leu Ala Ala Asn Gly Gln
                     165                   170                   175
Ser Pro Ser Pro Gly Ser Gln Ser Pro Val Val Pro Ala Gly Ala Val
                     180                   185                   190
Ser Thr Gly Ser Ser Ser Pro Gly Thr Pro Gln Pro Ala Pro Gln Leu
                195                   200                   205
Pro Leu Asn Ala Ala Pro Pro Ser Ser Val Pro Pro Val Pro Pro Ser
     210                   215                   220
Glu Ala Leu Pro Pro Pro Ala Cys Pro Ser Ala Pro Ala Pro Arg Arg
225                   230                   235                   240
Ser Ile Ile Ser Arg Leu Phe Gly Thr Ser Pro Ala Thr Glu Ala Ala
                     245                   250                   255
Pro Pro Pro Pro Glu Pro Val Pro Ala Ala Gln Gly Pro Ala Thr Val
                260                   265                   270
Gln Ser Val Glu Asp Phe Val Pro Asp Asp Arg Leu Asp Arg Ser Phe
                275                   280                   285
Leu Glu Asp Thr Thr Pro Ala Arg Asp Glu Lys Lys Val Gly Ala Lys
     290                   295                   300
Ala Ala Gln Gln Asp Ser Asp Ser Asp Gly Glu Ala Leu Gly Gly Asn
305                   310                   315                   320
Pro Met Val Ala Gly Phe Gln Asp Asp Val Asp Leu Glu Asp Gln Pro
                325                   330                   335
Arg Gly Ser Pro Pro Leu Pro Ala Gly Pro Val Pro Ser Gln Asp Ile
```

```
             340                    345                    350
 Thr Leu Ser Ser Glu Glu Glu Ala Glu Val Ala Ala Pro Thr Lys Gly
             355                    360                    365
 Pro Ala Pro Ala Pro Gln Gln Cys Ser Glu Pro Glu Thr Lys Trp Ser
     370                    375                    380
 Ser Ile Pro Ala Ser Lys Pro Arg Arg Gly Thr Ala Pro Thr Arg Thr
 385                    390                    395                    400
 Ala Ala Pro Pro Trp Pro Gly Gly Val Ser Val Arg Thr Gly Pro Glu
                     405                    410                    415
 Lys Arg Ser Ser Thr Arg Pro Pro Ala Glu Met Glu Pro Gly Lys Gly
             420                    425                    430
 Glu Gln Ala Ser Ser Ser Glu Ser Asp Pro Glu Gly Pro Ile Ala Ala
             435                    440                    445
 Gln Met Leu Ser Phe Val Met Asp Asp Pro Asp Phe Glu Ser Glu Gly
     450                    455                    460
 Ser Asp Thr Gln Arg Arg Ala Asp Asp Phe Pro Val Arg Asp Asp Pro
 465                    470                    475                    480
 Ser Asp Val Thr Asp Glu Asp Glu Gly Pro Ala Glu Pro Pro Pro Pro
                     485                    490                    495
 Pro Lys Leu Pro Leu Pro Ala Phe Arg Leu Lys Asn Asp Ser Asp Leu
             500                    505                    510
 Phe Gly Leu Gly Leu Glu Glu Ala Gly Pro Lys Glu Ser Ser Glu Glu
             515                    520                    525
 Gly Lys Glu Gly Lys Thr Pro Ser Lys Glu Lys Lys Lys Lys Lys Lys
     530                    535                    540
 Lys Gly Lys Glu Glu Glu Glu Lys Ala Ala Lys Lys Lys Ser Lys His
 545                    550                    555                    560
 Lys Lys Ser Lys Asp Lys Glu Glu Gly Lys Glu Glu Arg Arg Arg Arg
                     565                    570                    575
 Gln Gln Arg Pro Pro Arg Ser Arg Glu Arg Thr Ala Ala Asp Glu Leu
             580                    585                    590
 Glu Ala Phe Leu Gly Gly Gly Ala Pro Gly Gly Arg His Pro Gly Gly
             595                    600                    605
 Gly Asp Tyr Glu Glu Leu
     610
```

<210> 91
<211> 3133
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (113)..(1879)

<400> 91
agcgaccgaa ctctggcggt ggtggttaag acggcgaagg cggcagcggc ggcgacagct 60
ctggggtttg cgtctcgggg tgtgtcggcc gccgctgctg cttgggcctg gtatgtacag 120
atggctggtt aggattctcg gcaccatttt ccgtttctgc gaccggtcgg tgccccctgc 180
ccgggccctc ctgaagaggc ggcgctcaga cagcactctg ttttctacag tggacactga 240
tgaaatacca gccaaaagac caagattaga ttgctttatt caccaagtga aaaacagtct 300
ctacaatgct gccagcttat ttggattccc attccagctg accacaaagc ccatggtaac 360
ttctgcttgt aatggaacac ggaatgtggc cccttcagga gaggtatttt cgaactcttc 420
atcttgtgaa ctgacaggtt ctggatcctg aacaacatg ctgaaactgg gtaataaatc 480
tcctaatgga ataagtgact atccaaagat cagagtgaca gttacccgag atcagccacg 540
cagagtcctg ccttcctttg gttttacttt gaactcagaa ggctgtaata gaagaccagg 600
tggccgtcgc catagcaaag gtaatccaga gagttcttta atgtggaaac ctcaggaaca 660
ggctgtaaca gagatgattt ctgaagagag tggcaagggt ctgaggcgtc cccattgtac 720
tgtggaggag ggtgttcaaa aagaggaaag agagaagtac cgaaagttat tggaacgact 780
taaagaaagt ggtcatggaa actctgtctg tcctgtaact tcaaattatc acagttctca 840
aagaagtcag atggacacat taaagaccaa aggctggggg gaagagcaaa atcacggagt 900
caaaacaact cagtttgttc caaaacaata tagacttgtt gaaacaaggg gacctctatg 960
ttcattgaga agtgaaaaga ggtgttcaaa ggggaaaatt actgatacag agaagatggt 1020
cggaatcaga tttgaaaatg aaagtaggag gggataccaa ctggagcctg acctatcaga 1080
agaagtgtcg gcccgactcc gcctgggcag tggaagcaat ggcttactca ggaggaaagt 1140
gtcaataatt gagacaaagg aaaagaattg ctcaggcaaa gagagggaca gaagaacgga 1200
cgatctcctt gaacttacag aggacatgga aaaggaaatc agtaatgccc taggccatgg 1260
cccacaggat gaaatcctaa gtagtgcttt caaattgcga attactcgag gagatattca 1320
tacattaaag aactatcact ggctcaatga tgaagtcatt aatttttaca tgaatcttct 1380
ggtggaaaga aataaaaagc aaggctatcc agcacttcat gtattcagta ctttcttcta 1440
tcctaaatta aagtctgggg gttaccaagc agtgaaacga tggaccaaag gggtaaatct 1500

```
ctttgaacaa gaaattattc tggtgcctat tcatcggaag gtacattgga gcctggtggt 1560
gattgaccta agaaaaaagt gtcttaaata tctggattct atgggacaaa agggccacag 1620
gatctgtgag attctccttc agtatttaca ggatgaaagt aagaccaaaa gaaatagtga 1680
tctgaatctt ttagagtgga cccatcacag catgaaacca cacgagattc ctcaacagct 1740
gaatgggagt gattgtggaa tgtttacttg taaatatgca gattatattt ctagggacaa 1800
acctatcaca tttactcagc accagatgcc tctcttccgg aagaagatgg tgtgggaaat 1860
ccttcatcag cagttgctgt gagaaaactt tgcctggtcc ctctagctgc tggtggttct 1920
ttcacagaca tttccatata cctcatgcat tgtgggttaa aaagtccctg catcacttct 1980
gttctcacag gtactgagct gtcaaaagtg catgaaggcc tctcactgta ctctagtcct 2040
gacttggggt gcagagggct gcttgcaatc ctgtttgtaa ggctgtgcct gctcagagct 2100
ttggactgtt caacccacac aagaacaaac gctaactaat attttttta agagattctt 2160
ttccctatga atgtgggaaa tgcaggattt attctgtgaa ttgtttgttt ctgtgtgttt 2220
gttcagcgta ttcattcact cactcgtttg caaacataat gggcagtggt catttactgc 2280
tgctctttta cagttagctc taaattactt gtttgaacta tttatttctg aaaggaatgt 2340
tactcaagct gccactccct gctgaagagc aggagggaac tctcactggg ggcggaagga 2400
agtggagctg gagcagtaac tgccaacatg aagctggagg gtttgggatt ttttttgttt 2460
ttgttttttt gaggctcaaa aaatgctggg agaaatgaaa atgctgtggg atagggctcc 2520
tgttgccttt cagaggaagt ctgacactac agcgttggca cagtgccgtg aacagtggaa 2580
ctgtgcccaa gggactctga ctatccaagc atcttccgaa gagtgttgtg gtcaccttaa 2640
agagacttcc ctttctggaa atgtggtgac ttggcttagt cttcaaactg gattcatgga 2700
tttgaagtaa ctgtaaaccc taaatcttca ttttcatccc agatctggtt gagtataaac 2760
ctcagaattg tagggctgg cctgagctgt ttatttcaaa agatactatt caatttaaag 2820
ctatttttcc tcagagtttt tgttttctat atattaagtc taaattaagt tttctactca 2880
ttaagactaa catctcccca ctccatcccc actgaaattt gtggaagaaa atttagtact 2940
tggctctgag gttgccagtt atacaataat ctattttgca tatgaaagtt tgtatttaac 3000
tttttgttc attaaaaacc ttactgatat ggttataact tcagacagtt tagagttggt 3060
cagaacatat tttgcaagat ctagtgccta gtgttgcttt tctgatgtaa taaaaggtgg 3120
tctggcagaa cct                                                     3133
```

<210> 92

<211> 589

<212> PRT

<213> Homo sapiens

<400> 92

```
Met Tyr Arg Trp Leu Val Arg Ile Leu Gly Thr Ile Phe Arg Phe Cys
 1               5                   10                  15
Asp Arg Ser Val Pro Pro Ala Arg Ala Leu Leu Lys Arg Arg Arg Ser
            20                  25                  30
Asp Ser Thr Leu Phe Ser Thr Val Asp Thr Asp Glu Ile Pro Ala Lys
        35                  40                  45
Arg Pro Arg Leu Asp Cys Phe Ile His Gln Val Lys Asn Ser Leu Tyr
    50                  55                  60
Asn Ala Ala Ser Leu Phe Gly Phe Pro Phe Gln Leu Thr Thr Lys Pro
65                  70                  75                  80
Met Val Thr Ser Ala Cys Asn Gly Thr Arg Asn Val Ala Pro Ser Gly
                85                  90                  95
Glu Val Phe Ser Asn Ser Ser Ser Cys Glu Leu Thr Gly Ser Gly Ser
            100                 105                 110
Trp Asn Asn Met Leu Lys Leu Gly Asn Lys Ser Pro Asn Gly Ile Ser
        115                 120                 125
Asp Tyr Pro Lys Ile Arg Val Thr Val Thr Arg Asp Gln Pro Arg Arg
    130                 135                 140
Val Leu Pro Ser Phe Gly Phe Thr Leu Asn Ser Glu Gly Cys Asn Arg
145                 150                 155                 160
Arg Pro Gly Gly Arg Arg His Ser Lys Gly Asn Pro Glu Ser Ser Leu
            165                 170                 175
Met Trp Lys Pro Gln Glu Gln Ala Val Thr Glu Met Ile Ser Glu Glu
            180                 185                 190
Ser Gly Lys Gly Leu Arg Arg Pro His Cys Thr Val Glu Glu Gly Val
        195                 200                 205
Gln Lys Glu Glu Arg Glu Lys Tyr Arg Lys Leu Leu Glu Arg Leu Lys
    210                 215                 220
Glu Ser Gly His Gly Asn Ser Val Cys Pro Val Thr Ser Asn Tyr His
225                 230                 235                 240
Ser Ser Gln Arg Ser Gln Met Asp Thr Leu Lys Thr Lys Gly Trp Gly
            245                 250                 255
Glu Glu Gln Asn His Gly Val Lys Thr Thr Gln Phe Val Pro Lys Gln
            260                 265                 270
Tyr Arg Leu Val Glu Thr Arg Gly Pro Leu Cys Ser Leu Arg Ser Glu
    275                 280                 285
```

Lys Arg Cys Ser Lys Gly Lys Ile Thr Asp Thr Glu Lys Met Val Gly
    290   295   300

Ile Arg Phe Glu Asn Glu Ser Arg Arg Gly Tyr Gln Leu Glu Pro Asp
305   310   315   320

Leu Ser Glu Glu Val Ser Ala Arg Leu Arg Leu Gly Ser Gly Ser Asn
            325   330   335

Gly Leu Leu Arg Arg Lys Val Ser Ile Ile Glu Thr Lys Glu Lys Asn
            340   345   350

Cys Ser Gly Lys Glu Arg Asp Arg Arg Thr Asp Asp Leu Leu Glu Leu
        355   360   365

Thr Glu Asp Met Glu Lys Glu Ile Ser Asn Ala Leu Gly His Gly Pro
    370   375   380

Gln Asp Glu Ile Leu Ser Ser Ala Phe Lys Leu Arg Ile Thr Arg Gly
385   390   395   400

Asp Ile His Thr Leu Lys Asn Tyr His Trp Leu Asn Asp Glu Val Ile
            405   410   415

Asn Phe Tyr Met Asn Leu Leu Val Glu Arg Asn Lys Lys Gln Gly Tyr
            420   425   430

Pro Ala Leu His Val Phe Ser Thr Phe Phe Tyr Pro Lys Leu Lys Ser
        435   440   445

Gly Gly Tyr Gln Ala Val Lys Arg Trp Thr Lys Gly Val Asn Leu Phe
    450   455   460

Glu Gln Glu Ile Ile Leu Val Pro Ile His Arg Lys Val His Trp Ser
465   470   475   480

Leu Val Val Ile Asp Leu Arg Lys Lys Cys Leu Lys Tyr Leu Asp Ser
            485   490   495

Met Gly Gln Lys Gly His Arg Ile Cys Glu Ile Leu Leu Gln Tyr Leu
            500   505   510

Gln Asp Glu Ser Lys Thr Lys Arg Asn Ser Asp Leu Asn Leu Leu Glu
        515   520   525

Trp Thr His His Ser Met Lys Pro His Glu Ile Pro Gln Gln Leu Asn
    530   535   540

Gly Ser Asp Cys Gly Met Phe Thr Cys Lys Tyr Ala Asp Tyr Ile Ser
545   550   555   560

Arg Asp Lys Pro Ile Thr Phe Thr Gln His Gln Met Pro Leu Phe Arg
            565   570   575

Lys Lys Met Val Trp Glu Ile Leu His Gln Gln Leu Leu
        580   585

<210> 93
<211> 2987
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (145)..(1926)

<400> 93

```
gaaaaacata ctattccttt ggtagtccag aaagaaacat catcttcaga taataagaaa  60
cagataccta atgaagcttc tgctagaagt gaaagagaca catcagacct agagcaaaac  120
tggtcattgc aagatcatta tagaatgtat tcacccataa tataccaagc cctctgtgag  180
cacgtgcaga ctcagatgtc actgatgaat gacttgactt caaagaacat ccctaatgga  240
attcctgctg taccatgcca tgctccctct cattctgaat ctcaggcaac tcctcattct  300
agttatggct tatgtacctc cacccagtc tggtcacttc agcggccacc ctgccctcca  360
aaggttcatt ctgaagttca aactgatggc aacagtcagt ttgcatcaca agaggattca  420
gaaattcaga ggttgattac agaaatggag gcatgtatat ctgtacttcc aacagtaagt  480
ggaaacacag atattcaagt tgagatagca ctggccatgc aaccattaag aagtgagaat  540
gctcagttac gaaggcagtt gagaattttg aaccagcaac tcagagaaca acagaaaact  600
caaaaaccat ctggtgctgt ggattgcaac cttgaattgt tttctcttca gtcattgaat  660
atgtcactgc aaaatcaatt ggaggagtca ctaaagagcc aggaattact gcagagtaaa  720
aatgaagagc tgttaaaagt gattgaaaat cagaaagatg aaaacaaaaa atttagtagt  780
atatttaaag acaaagatca aactatactt gaaataaac agcaatatga tattgagata  840
acaagaataa aaattgaatt ggaggaagcc ctagtcaatg tgaaaagctc ccagtttaag  900
ttagaaactg ctgaaaagga aaaccagata ttggggataa cattacgtca gcgtgatgct  960
gaggtgactc gactaagaga attaaccaga actttacaga ctagcatggc aaagcttctc  1020
tccgatctta gtgtggacag tgctcgctgc aagcctggga ataaccttac caaatcactc  1080
ttgaacattc atgataaaca acttcaacat gacccagctc ctgctcacac ttccataatg  1140
agctatctaa ataagttaga aacaaattac agttttacac attcagagcc actttctaca  1200
attaaaaatg aggaaaccat agagccagac aaaacctatg aaaatgttct gtcctccaga  1260
ggccctcaga atagtaacac taggggcatg gaggaagcat ctgcacctgg aattatttct  1320
```

```
gccctttcaa aacaggattc tgatgaaggg agtgaaacta tggctttaat agaagatgag 1380

cataatttgg ataatacaat ttacattcct tttgctagaa gcactcctga aaagaaatca 1440

ccactttcta agagactatc ccctcagcca caaataagag cagctacaac acagctagtc 1500

agcaacagtg gacttgctgt ctctggaaaa gaaaataaac tgtgtacacc tgtaatctgt 1560

tcctcttcaa caaaggaagc agaagatgca cctgaaaaac tttccagagc atctgatatg 1620

aaggacacac agctcctcaa gaaaataaag gaagcaattg gtaagatccc tgctgccacc 1680

aaggagccag aggaacaaac tgcatgtcat ggcccatcag gttgtcttag caacagcctt 1740

caagtgaaag gcaatactgt ctgtgatggt agtgttttca cttctgactt gatgtctgac 1800

tggagcatct cttcgttttc aacgttcact tctcgtgatg aacaagactt cagaaatggc 1860

cttgcggcat tagatgccaa catagctaga ctccagaagt ctttaaggac tggtcttctg 1920

gagaaatgaa ttcagaagaa aattcatcag gtgcttcttt ttaaaactag aacttggcta 1980

tattgaatgt gtatttttct ttagtgaaat gatgttttat gttattatgt gtgaagtaat 2040

atattgtaca agtaataaat gtattgttga gatatattga cactgaggag cttataaaaa 2100

caagtcatct taagttcaca attgctacaa gaagaaagtt gtggataact aggaaattat 2160

tgtaagtaat gtttttatttc agtacttagc aattagagtt cttttattaa gatgtatctg 2220

ctggattaag ggtacaggtt gaaatagttc tgtggctgtc ctaagaaata atgggaaaag 2280

aatctctgga tgtaagtttt tctgttgaaa ctagagggtt ttttttttct gtttacatat 2340

actttttttt aatagcaatg tgttttttatt aaacatgctg tgtgccacag gccagtgttg 2400

ttggtgaaat atataaacat ttatttaaag agaaaagtta ccagtatcta cacctcttaa 2460

aaaacattga ttggtctaaa aaatatatag ataacatcct aagttaacat atggcttctt 2520

aaaacttggg cacttttatt tgtttttatc ccaaattcat gttttaaggc ctttaaagaa 2580

tagtcagact gataaagaag tgctaacaga taagctatag ttggggaaat ttgtgggttt 2640

tttttaaata agaaatgttt atttttgtcc ttatatttaa acatgatgga atttgtaaat 2700

cttggcattg attgtaattc tgcctttttg gaagaatttt ttctcccagc atgttagctg 2760

agaatattct ctattttata aataatatga agtaggttgg tctctctgct tctctatacc 2820

aggacttctt agctcagtat catctccctt catgtaagca gcacgtttta actcttagga 2880

agctgaatgt tgtgttatca ctaatacttt gtacaggtca cctgcctact ctaattgtcc 2940

ttagtacttg gacaggcttt atcattaaag agtgttctcc taatccc            2987
```

<210> 94

<211> 594

<212> PRT

<213> Homo sapiens

<400> 94

```
Met Tyr Ser Pro Ile Ile Tyr Gln Ala Leu Cys Glu His Val Gln Thr
 1               5                   10                  15
Gln Met Ser Leu Met Asn Asp Leu Thr Ser Lys Asn Ile Pro Asn Gly
            20                  25                  30
Ile Pro Ala Val Pro Cys His Ala Pro Ser His Ser Glu Ser Gln Ala
        35                  40                  45
Thr Pro His Ser Ser Tyr Gly Leu Cys Thr Ser Thr Pro Val Trp Ser
    50                  55                  60
Leu Gln Arg Pro Pro Cys Pro Pro Lys Val His Ser Glu Val Gln Thr
65                  70                  75                  80
Asp Gly Asn Ser Gln Phe Ala Ser Gln Glu Asp Ser Glu Ile Gln Arg
                85                  90                  95
Leu Ile Thr Glu Met Glu Ala Cys Ile Ser Val Leu Pro Thr Val Ser
            100                 105                 110
Gly Asn Thr Asp Ile Gln Val Glu Ile Ala Leu Ala Met Gln Pro Leu
        115                 120                 125
Arg Ser Glu Asn Ala Gln Leu Arg Arg Gln Leu Arg Ile Leu Asn Gln
    130                 135                 140
Gln Leu Arg Glu Gln Gln Lys Thr Gln Lys Pro Ser Gly Ala Val Asp
145                 150                 155                 160
Cys Asn Leu Glu Leu Phe Ser Leu Gln Ser Leu Asn Met Ser Leu Gln
                165                 170                 175
Asn Gln Leu Glu Glu Ser Leu Lys Ser Gln Glu Leu Leu Gln Ser Lys
            180                 185                 190
Asn Glu Glu Leu Leu Lys Val Ile Glu Asn Gln Lys Asp Glu Asn Lys
        195                 200                 205
Lys Phe Ser Ser Ile Phe Lys Asp Lys Asp Gln Thr Ile Leu Glu Asn
    210                 215                 220
Lys Gln Gln Tyr Asp Ile Glu Ile Thr Arg Ile Lys Ile Glu Leu Glu
225                 230                 235                 240
Glu Ala Leu Val Asn Val Lys Ser Ser Gln Phe Lys Leu Glu Thr Ala
                245                 250                 255
Glu Lys Glu Asn Gln Ile Leu Gly Ile Thr Leu Arg Gln Arg Asp Ala
            260                 265                 270
Glu Val Thr Arg Leu Arg Glu Leu Thr Arg Thr Leu Gln Thr Ser Met
        275                 280                 285
```

Ala Lys Leu Leu Ser Asp Leu Ser Val Asp Ser Ala Arg Cys Lys Pro
    290   295   300

Gly Asn Asn Leu Thr Lys Ser Leu Leu Asn Ile His Asp Lys Gln Leu
305   310   315   320

Gln His Asp Pro Ala Pro Ala His Thr Ser Ile Met Ser Tyr Leu Asn
            325   330   335

Lys Leu Glu Thr Asn Tyr Ser Phe Thr His Ser Glu Pro Leu Ser Thr
        340   345   350

Ile Lys Asn Glu Glu Thr Ile Glu Pro Asp Lys Thr Tyr Glu Asn Val
        355   360   365

Leu Ser Ser Arg Gly Pro Gln Asn Ser Asn Thr Arg Gly Met Glu Glu
    370   375   380

Ala Ser Ala Pro Gly Ile Ile Ser Ala Leu Ser Lys Gln Asp Ser Asp
385   390   395   400

Glu Gly Ser Glu Thr Met Ala Leu Ile Glu Asp Glu His Asn Leu Asp
            405   410   415

Asn Thr Ile Tyr Ile Pro Phe Ala Arg Ser Thr Pro Glu Lys Lys Ser
        420   425   430

Pro Leu Ser Lys Arg Leu Ser Pro Gln Pro Gln Ile Arg Ala Ala Thr
        435   440   445

Thr Gln Leu Val Ser Asn Ser Gly Leu Ala Val Ser Gly Lys Glu Asn
    450   455   460

Lys Leu Cys Thr Pro Val Ile Cys Ser Ser Ser Thr Lys Glu Ala Glu
465   470   475   480

Asp Ala Pro Glu Lys Leu Ser Arg Ala Ser Asp Met Lys Asp Thr Gln
            485   490   495

Leu Leu Lys Lys Ile Lys Glu Ala Ile Gly Lys Ile Pro Ala Ala Thr
        500   505   510

Lys Glu Pro Glu Glu Gln Thr Ala Cys His Gly Pro Ser Gly Cys Leu
        515   520   525

Ser Asn Ser Leu Gln Val Lys Gly Asn Thr Val Cys Asp Gly Ser Val
    530   535   540

Phe Thr Ser Asp Leu Met Ser Asp Trp Ser Ile Ser Ser Phe Ser Thr
545   550   555   560

Phe Thr Ser Arg Asp Glu Gln Asp Phe Arg Asn Gly Leu Ala Ala Leu
            565   570   575

Asp Ala Asn Ile Ala Arg Leu Gln Lys Ser Leu Arg Thr Gly Leu Leu
        580   585   590
Glu Lys

<210> 95
<211> 2534
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (84)..(1550)

<400> 95
ccttggccaa gaagttgcca ccaccaccgg gcagccccct gggccactca ccaactgcct 60
ctcctcctcc tacggcccga aagatgttcc caggcctggc tgcaccctcc ttgcccaaga 120
agctgaagcc tgaacaaata cgggtggaga tcaagcggga gatgctgccg ggggcccttc 180
atggggaact gcacccatct gagggtccct ggggggcacc acgggaagac atgacacccc 240
tgaacctgtc gtcccgggca gagccggtgc gcgacatccg ctgtgagttc tgcggcgagt 300
tcttcgagaa ccgcaagggc ctgtcgagtc acgcgcgctc acacctgcgg cagatggggt 360
tgaccgagtg gtccgtcaat ggttcgccca tcgacacact gcgagagatc ctcaagaaga 420
agtccaagcc gtgcctcatc aagaaggagc caccggctgg agacctggcc cctgccctgg 480
ctgaggacgg gcctcccacc gtggcccctg ggcccgtgca gtccccactg ccgctgtcgc 540
ccctggctgg ccggccaggc aaaccaggtg cagggccggc ccaggttcct cgtgagctca 600
gcctgacgcc catcactggg gccaagccct cagccactgg ctacctgggc tcagtggcag 660
ccaagcggcc cctgcaggag gaccgcctcc tcccagcaga ggtcaaggcc aagacctaca 720
tccagactga actgcccttc aaggcaaaga cccttcatga gaagacctcc cactcctcca 780
ccgaggcctg ctgcgagctg tgtggccttt actttgaaaa ccgcaaggcc ctggccagcc 840
acgcacgggc acacctgcgg cagttcggcg tgaccgagtg gtgcgtcaat ggctcgccca 900
tcgagacact gagcgagtgg atcaaacacc ggccccagaa ggtgggcgcc taccgcagct 960
acatccaggg cggccgcccc ttcaccaaga agttccgcag tgccggccat ggccgtgaca 1020
gtgacaagcg gccgtccctg gggctggcac ccggggggcct ggccgtggtc ggccgcagtg 1080
ccggagggga gccagggccc gaggctggcc gggcagccga cggtggtgag cggcctctgg 1140
cagccagccc gccaggcacc gtgaaggctg aggagcacca gcggcagaac atcaacaaat 1200

ttgaacgccg acaagcccgc cctccagatg cctccgcagc ccggggaggc gaggacacca 1260

atgacctaca gcagaagctg gaggaggtgc ggcaaccccc accccgagtc cggccagtcc 1320

cctccctggt gccccggccc ccccagacat cacttgtcaa gttcgtgggc aacatctaca 1380

ccctcaaatg caggttctgt gaggtggaat tccagggccc cctctccatc caggaagagt 1440

gggtgcggca cttacagcgg cacatcctgg agatgaactt ctccaaagcg gaccccccac 1500

ctgaggagtc ccaggccccg caggcacaga cagcggcggc agaggctccc taacacaaaa 1560

gcattccaga tccctctcg tgccacctct gtctcctctt cttcctcctc tgtgtcctcg 1620

tccctcttcc tctttctttc cgtttccaaa ggagcaagcc aaaacctcaa accggcgccc 1680

cttgggggcc gggcacacta cagccagggc gccgggagcc agctagctgc ccttcccca 1740

gcccgaggac tctgggggcca cagggtgtct tccttcagcc catgcccacc tggtccagca 1800

ggggcagcag ccaggtctct gatggcagcc ggtctggtca caggggagga cagcactccc 1860

ccgtctagca gccaggcagg gcgatgtctg ccatccgtgg ccatttgcaa agaccccaaa 1920

gaccctgtt ctggttccct ctctccccca tgaatatcct ctcacacaca tgtacatgcg 1980

aacacacaca acacgcacct cgtgagaccc gggacctgcc ccggacccc agttcctggg 2040

ttgaacgacc acatcatgcc acggtgcttg ctcaggggaa gccacgctcc ctctgtgggg 2100

cctgctgggg cctgggagcc ccccactgag cccacaatgc cacggaaatc cttgttggct 2160

gcccccgaga ggggccttcc cagctgggaa gagctcagag ctgacagctg cctcctgcca 2220

tgtcaaggcc ccccaaagag cctcaggggc tctggggccc tggagggtgg ggttgggggg 2280

tgggactctc ctcccccact cctgctccct ctcccttttc actgttgctt tctatgtata 2340

gctccctaga cctttcactt ttttaaaaac gcgttttgtg tagagaataa ggaacgtgga 2400

tcttttatt ttgcaatcct gggccagcta gaagccagga gctgattgac cttttaactt 2460

ttttcagtgg ccacattttg gttatcgatg tacctagaag tatgtaaatt agattaaatt 2520

tctcttctgg aaac   2534

<210> 96

<211> 489

<212> PRT

<213> Homo sapiens

<400> 96

Met Phe Pro Gly Leu Ala Ala Pro Ser Leu Pro Lys Lys Leu Lys Pro
1   5   10   15

Glu Gln Ile Arg Val Glu Ile Lys Arg Glu Met Leu Pro Gly Ala Leu
            20   25   30

His Gly Glu Leu His Pro Ser Glu Gly Pro Trp Gly Ala Pro Arg Glu

```
                35                    40                    45
    Asp Met Thr Pro Leu Asn Leu Ser Ser Arg Ala Glu Pro Val Arg Asp
            50                    55                    60
    Ile Arg Cys Glu Phe Cys Gly Glu Phe Phe Glu Asn Arg Lys Gly Leu
    65                    70                    75                    80
    Ser Ser His Ala Arg Ser His Leu Arg Gln Met Gly Val Thr Glu Trp
                    85                    90                    95
    Ser Val Asn Gly Ser Pro Ile Asp Thr Leu Arg Glu Ile Leu Lys Lys
                    100                   105                   110
    Lys Ser Lys Pro Cys Leu Ile Lys Lys Glu Pro Pro Ala Gly Asp Leu
                    115                   120                   125
    Ala Pro Ala Leu Ala Glu Asp Gly Pro Pro Thr Val Ala Pro Gly Pro
            130                   135                   140
    Val Gln Ser Pro Leu Pro Leu Ser Pro Leu Ala Gly Arg Pro Gly Lys
    145                   150                   155                   160
    Pro Gly Ala Gly Pro Ala Gln Val Pro Arg Glu Leu Ser Leu Thr Pro
                    165                   170                   175
    Ile Thr Gly Ala Lys Pro Ser Ala Thr Gly Tyr Leu Gly Ser Val Ala
                    180                   185                   190
    Ala Lys Arg Pro Leu Gln Glu Asp Arg Leu Leu Pro Ala Glu Val Lys
            195                   200                   205
    Ala Lys Thr Tyr Ile Gln Thr Glu Leu Pro Phe Lys Ala Lys Thr Leu
        210                   215                   220
    His Glu Lys Thr Ser His Ser Ser Thr Glu Ala Cys Cys Glu Leu Cys
    225                   230                   235                   240
    Gly Leu Tyr Phe Glu Asn Arg Lys Ala Leu Ala Ser His Ala Arg Ala
                    245                   250                   255
    His Leu Arg Gln Phe Gly Val Thr Glu Trp Cys Val Asn Gly Ser Pro
            260                   265                   270
    Ile Glu Thr Leu Ser Glu Trp Ile Lys His Arg Pro Gln Lys Val Gly
            275                   280                   285
    Ala Tyr Arg Ser Tyr Ile Gln Gly Gly Arg Pro Phe Thr Lys Lys Phe
        290                   295                   300
    Arg Ser Ala Gly His Gly Arg Asp Ser Asp Lys Arg Pro Ser Leu Gly
    305                   310                   315                   320
    Leu Ala Pro Gly Gly Leu Ala Val Val Gly Arg Ser Ala Gly Gly Glu
```

```
                        325               330               335
        Pro Gly Pro Glu Ala Gly Arg Ala Ala Asp Gly Gly Glu Arg Pro Leu
                    340               345               350
        Ala Ala Ser Pro Pro Gly Thr Val Lys Ala Glu Glu His Gln Arg Gln
                355               360               365
        Asn Ile Asn Lys Phe Glu Arg Arg Gln Ala Arg Pro Pro Asp Ala Ser
            370               375               380
        Ala Ala Arg Gly Gly Glu Asp Thr Asn Asp Leu Gln Gln Lys Leu Glu
        385               390               395               400
        Glu Val Arg Gln Pro Pro Arg Val Arg Pro Val Pro Ser Leu Val
                        405               410               415
        Pro Arg Pro Pro Gln Thr Ser Leu Val Lys Phe Val Gly Asn Ile Tyr
                    420               425               430
        Thr Leu Lys Cys Arg Phe Cys Glu Val Glu Phe Gln Gly Pro Leu Ser
                435               440               445
        Ile Gln Glu Glu Trp Val Arg His Leu Gln Arg His Ile Leu Glu Met
            450               455               460
        Asn Phe Ser Lys Ala Asp Pro Pro Glu Glu Ser Gln Ala Pro Gln
        465               470               475               480
        Ala Gln Thr Ala Ala Ala Glu Ala Pro
                    485
```

<210> 97

<211> 3741

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (110)..(892)

<400> 97

```
attgaagatt aaacgttctc tcttcaacta ccatgacacg aggatccatg cctgcctcta 60
ctttattgcc cctactggac attcactaaa gtccctggat ctggtcacca tgaaaaagct 120
ggacagtaag gtgaacatca ttccaataat tgcaaaagct gacaccattg ccaagaatga 180
```

```
actgcacaaa ttcaagagta agatcatgag tgaactggtc agcaatgggg tccagatata 240
tcagtttccc actgatgaag aaacggtggc agagattaac gcaacaatga gtgtccatct 300
cccatttgca gtggttggca gcaccgaaga ggtgaagatt ggcaacaaga tggcaaaggc 360
caggcagtac ccctggggtg tggtgcaggt tgagaatgaa aatcattgcg attttgtgaa 420
acttcgagag atgctgatcc gcgtgaacat ggaggacttg cgagagcaga ctcacacccg 480
ccactatgaa ttgtaccgac gctgtaagct tgaagagatg gggttcaagg acactgaccc 540
tgacagcaaa cccttcagtc ttcaggagac atatgaagca aaaaggaatg aattcctggg 600
agaactgcag cttaaggagg cagagaaaga gcttcacgag aagtttgacc ttctaaagcg 660
agaagctgaa cttaaggagg cagagaaaga gcttcacgag aagtttgacc ttctaaagcg 720
gacacaccaa gaagaaaaga agaaagtgga agacaagaag aaggagcttg aggaggagaa 780
gaacaacttc cagaagaaga aagcagcggc tcagttacta cagtcccagg cccagcaatc 840
tgggcccagc aaaccaagaa agacaaggat aagaaaaatg caagcttcac ataaagcct 900
ggcaagccaa ggatgttccc gcattcacct gcttttgcag taatatcgta tctctgccat 960
gtgtgttctt tagttttatt ttattttatt ttattttttt acccttcctc aaacaccagt 1020
aactattatt aactcgtttt gctgaatgtt gttgggtggt agaaaatgat agaacaaggg 1080
aataaccgcg aatgtctgtg cagctggac tctgtttccg gaaagtaaat gatttgcttt 1140
ttatgcctgt tctgaatggc agcacgaagc aggcctgtta cttgtatgtc gctttggaca 1200
gaggaaagtg gggtaaaatg ctacctgtac gtctgacatg aaaacttctc accgcctcag 1260
cagctgaact aaaaacctga atagccatga caagagtttg catttttcttg atgattcatc 1320
tccatgagtg cacaatccct gaactcactg tctttttctcc acacttgtcc taagccaagg 1380
tagatttgta cgtagacaga ctggtgagca agcattatat tttattttta cccttgcatg 1440
acattttcat tttaatcaat aacattattt ggcctgggct tgtgggtctg ttcagactgt 1500
ctcctctcat ggtttgaaac tgcatctgaa tgcctgcctt caatcctggc caagttggag 1560
tagactggta tgagaaaact atgattagtt cacatttact ggtgcatcct tgatcctctc 1620
acagatagag gtcttaaagg ttggatcatg taacattgct tagtagaaga atcttcttct 1680
aaggatgatg ggctttctac agcctgctta ccactaacag taaggaatct ttcataaaca 1740
cacctcagtt tgttcccagt gggcttagag ggaggacctg atgactgatt ccaggatact 1800
tgtacttcta ataacatttt tcatgaatca tgagaaaatt tccacagata cttcccttag 1860
aaaatttgct ataaactctg tatcattggt agcacaaatt tgagcgaggc cttgtcaatt 1920
ttaaggtgga aataggaagg accacaacat gacccgtaag tcaagaaggt agacatttca 1980
tatccagctt ccttgcttag tctcctttca gtatttggca ataaaagaaa gaagaaatag 2040
aacagctgaa gtctcaaatc attgtctgga attttcctca ccttggctag ctccacctgt 2100
tctttgtcta aggcccttgc ctcatcaggg attagaactg gcccatatgc cagaacctgt 2160
actaaatgcc taatttgtat ggaagagtgc atatttaatc tcttttctat actgctcctt 2220
tctgatgctt atcctttcat ctgtgtgatt gttttttccc ctctactaac aagatcctcc 2280
cagctttctc tctacatgta gaaaggataa catttctcat gaacccactg ccccctctgca 2340
```

```
ttttcctcac tggttagaga ttaagtaaat aggatagaat atgctgcgtc tcccctgaca 2400
cacactttct tttttgaatg agcaagtctc cattttgatt tcagcaaaga ttttttctcc 2460
ttttctttgt cctcaaccat acttagagga aagaaggaat ggtcttccat gaactgatta 2520
tgcttaatta agcaaagtaa ggaaattagt ttcatggaag cctaaacaaa gctggaatag 2580
aaactacaca ctagacacag cagtagtcat agtcttcaca ggtttaggag ctactggacc 2640
aacattcttg tttttgcttt tgttttttta aataattcta gtctggagct aactgtggag 2700
cagccaaata gtagctggca tgttgattca aaccatgggc tgaatttgct cataggctgt 2760
gcatcagaca aaagcttgaa tatttgtgtt gtatgcttgt tccaaccacc gcttgtgtga 2820
gcatttttgt ggcttgtaca gaaagtacac ttttaaattg tctcttgcat cactaaaatt 2880
tttttaaaat gagcataaca acgaaaggca tccagctgac tttttgattc caagattatt 2940
gattggattg acttttttgc attaaatttt tcccagcaaa ataaatcata tggcgagtca 3000
gggaataaaa agtcaaaaga aacaaataga agcttttttt tttaaaaaat gtattgcttc 3060
tgaacttttt tctgccactg ctccctagcc ctgtttagtt tgttattgct gcttttcttt 3120
tttctttctg tatctatgcc ttttttttcac agtagtcctt ggctctgcac ggaataaatg 3180
ataccctcaa atctaattgg atgtgctttc gcctttgcat gtaagtacgg tagtaagaaa 3240
cctttgagat ctttctgact tttcaaaatt agagaaagca aatgggatgg acagattttt 3300
tttttctttt caaggggggc aggaaggtaa tggtttgagt agcctttgtt taaaaaaaaa 3360
actaaatata tttaaaaggc cacatttata ttttttcac aagaaccaca taataaattc 3420
cacttcttga cctgaatttg gaaatccgaa attactaatc caggccaggt gtggtggctc 3480
atgcctgtaa tcccagcact ttgagaggcc gaggtgggca gatcacttga ggcctggagt 3540
tcaagaccac cttggcgaac acggtgaaac cccgtctcta caaaaaatac aaaaattagc 3600
caggcgtggt ggcacgtgcc tgtagtccca gctacttggg aggctaagtc aggagaattg 3660
cttgaacttg ggagatggag gttgcagtga gccaagattg caccactgca ttccaacctg 3720
ggtgatgaag tgagactctc c                                      3741
```

<210> 98
<211> 261
<212> PRT
<213> Homo sapiens

<400> 98
Met Lys Lys Leu Asp Ser Lys Val Asn Ile Ile Pro Ile Ile Ala Lys
1   5   10   15
Ala Asp Thr Ile Ala Lys Asn Glu Leu His Lys Phe Lys Ser Lys Ile
            20   25   30

```
Met Ser Glu Leu Val Ser Asn Gly Val Gln Ile Tyr Gln Phe Pro Thr
        35                  40                  45
Asp Glu Glu Thr Val Ala Glu Ile Asn Ala Thr Met Ser Val His Leu
        50                  55                  60
Pro Phe Ala Val Val Gly Ser Thr Glu Glu Val Lys Ile Gly Asn Lys
65                  70                  75                  80
Met Ala Lys Ala Arg Gln Tyr Pro Trp Gly Val Val Gln Val Glu Asn
                85                  90                  95
Glu Asn His Cys Asp Phe Val Lys Leu Arg Glu Met Leu Ile Arg Val
            100                 105                 110
Asn Met Glu Asp Leu Arg Glu Gln Thr His Thr Arg His Tyr Glu Leu
        115                 120                 125
Tyr Arg Arg Cys Lys Leu Glu Glu Met Gly Phe Lys Asp Thr Asp Pro
        130                 135                 140
Asp Ser Lys Pro Phe Ser Leu Gln Glu Thr Tyr Glu Ala Lys Arg Asn
145                 150                 155                 160
Glu Phe Leu Gly Glu Leu Gln Lys Lys Glu Glu Glu Met Arg Gln Met
                165                 170                 175
Phe Val Met Arg Val Lys Glu Lys Glu Ala Glu Leu Lys Glu Ala Glu
                180                 185                 190
Lys Glu Leu His Glu Lys Phe Asp Leu Leu Lys Arg Thr His Gln Glu
        195                 200                 205
Glu Lys Lys Lys Val Glu Asp Lys Lys Lys Glu Leu Glu Glu Glu Val
        210                 215                 220
Asn Asn Phe Gln Lys Lys Lys Ala Ala Ala Gln Leu Leu Gln Ser Gln
225                 230                 235                 240
Ala Gln Gln Ser Gly Ala Gln Gln Thr Lys Lys Asp Lys Asp Lys Lys
                245                 250                 255
Asn Ala Ser Phe Thr
                260
```

<210> 99

<211> 3389

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (78)..(1466)

<400> 99

```
agcgggcgtg cggagcgggc gacagtggcg tgggatctgc ctctctgcga gcagctggga 60
gcggcggcgg cggcgccatg agcgggggca ccccttacat cggcagcaag atcagcctca 120
tctccaaggc ggagatccgc tacgagggca tcctctacac catcgacacc gaaaactcca 180
ccgtagccct tgccaaagtt cgatcctttg gtacagaaga cagaccgaca gatcgtccaa 240
taccacctcg agatgaagtc tttgaataca ttatattccg tgggagtgac attaaagacc 300
ttactgtttg tgagccacca aaaccacagt gttctttgcc tcaagaccca gctattgttc 360
agtcctcact aggctcatcg acttcttcat tccagtccat gggttcttat ggacctttcg 420
gcaggatgcc cacatacagt cagttcagtc cgagttcctt agttgggcag cagtttggtg 480
ctgttggtgt tgctggaagc tctttgacat cctttggaac agaaacatca aacagtggta 540
ccttacccca aagtagtgcg gttggttctg cctttacaca ggatacaaga tctctaaaaa 600
cacagttatc tcaaggtcgc tcaagccctc agttagaccc tttgagaaaa agcccaacca 660
tggaacaagc agtgcagacc gcctcagccc acttacctgc tccagcagct gttgggagaa 720
ggagtcctgt atcaaccagg cctttgccat ctgccagcca aaaggcagga gagaatcagg 780
agcacaggca agctgaagta cacaaagttt caaggccaga aaatgagcaa ctcagaaatg 840
ataacaagag acaagtagct ccaggtgctc cttcagctcc aaggagaggg cgtggggtc 900
atcggggtgg caggggaaga tttggtattc ggcgagatgg gccaatgaaa tttgagaaag 960
actttgactt tgaaagtgca aatgcacaat tcaacaagga agagattgac agagagtttc 1020
ataataaact taaattaaaa gaagataaac ttgagaaaca ggagaagcct gtaaatggtg 1080
aagataaagg agactcagga gttgataccc aaaacagtga aggaaatgcc gatgaagaag 1140
atccacttgg acctaattgc tattatgaca aaactaaatc cttctttgat aatatttctt 1200
gtgatgacaa tagagaacgg agaccaacct gggctgaaga aagaagatta aatgctgaaa 1260
catttggaat cccacttcgt ccaaaccgtg gccgtggggg atacagaggc agaggaggtc 1320
ttggtttccg tggtggcaga gggcgtggtg gtggcagagg tggtaccttc actgcccctc 1380
gaggatttcg cggtggattc agaggaggtc gtggggggccg ggagtttgcg gattttgaat 1440
ataggaaaga caacaaagtt gctgcatagt ctacaaacaa gtctctgaaa ataggtgaat 1500
ttctagctct tcatggtcct gaacattgat ttcagtcttt gcaagaatg aagaagtgaa 1560
ttcgctgtac atttgtcacc agcactgggt ttttgttttt tgtttgtttt tccgcttaat 1620
ttcaaagata aaatgcagtt acttttgggg gtggaaggct catcttaaaa catgagcatt 1680
aaatatattt ggaatagcag aaggttaagt aatttcttat gtatagttaa actaaagcag 1740
tacttcagtg ggacttaaca agtatttttt catcactgaa aggttttttt tttttttatca 1800
```

```
ctaaattgta tttggcaatt gcaagttgcc tgcagatagg gccgtgatac tgtgtttttga 1860
gccacagaag gttgtgtgtg tgtgtgtgtg tgtgtgtgtg tgtgtgtgtg tgtgtatgtg 1920
tgtgtctttt tcctcctttc ttttggggaa tcctgtaata tgaggtagct tatttcgtca 1980
attaattagg gtgctggatg gtagagaatt ttgtcagtca actatgtaca cacagtaaat 2040
actgtttctt aggcaaaggt aactttttta tatagttgta aaattccatt atattccatt 2100
gccaaagaaa cattaagaac tttgtatagc tgtataaaaa gcaactaatt ttttaaagaa 2160
taaacatttt aaagtcagca aacatactgt gtccttgcag aagttgatgt gctgagcagc 2220
agccttatgg gtgggtcttt ttttcttagt tttccaggct taacatttt gattttgttt 2280
tttaatgttt ggaacataaa tgaagatttg atacattatt tcattatcta aaaaggatta 2340
attattcatg ctcattgtaa gaacttcatt ttgtagcaaa tggcatatca caggatctgt 2400
ccagataatc gatattttca gtatacaaat gtaaataatc acagatgaga atgtacttag 2460
ctgtattttc aaataagtaa tcttcccccc ttttgtagga ctttaaaact aggcatcaat 2520
gaacctgttt ttcctattat gcctggaatt tagtcatgat accttgactc attccatcat 2580
atttcaagag gattcagagt gctagaaatt attttggtag cctgtaacac acggcaacac 2640
tggtccttgg gcctatgatg acccacagat gactcagtat agagttcatt gctaattata 2700
aattactagt gaatcttttt gatattttaa gctctagtgg gaaaaatctg gccacttttg 2760
tgtttttatg aaggccatgg aataaaaggg tccaaagatt taaatatttt tatctaatat 2820
tttgattgtt ttcttaactt tctccttaaa acattcagta gtgataaaga tatagaaact 2880
gcactgtagg agaattggaa tatttaaggc tggttgacat ttttttattt catttttatat 2940
cttttgtata gctctacaag gcagtgtttt gtaatttggt ttcattatga agatccagta 3000
cttggcagcc atagtttaga caatattgtt cagtgctgtt tgcttgcatg ttaacaacaa 3060
aaccttttag aggacccaca aatcatgata ttgaacacag ttccgaggca ttcagagcat 3120
cagagcaagt accatggcaa tacatgtgta gactgttgga gatgtcccgg gccaatttca 3180
agaaagaaaa ctgtaaatac tagttctact tgctctgaaa ttatgagttt atgcgttttc 3240
ccagccctcc gaatcactga ctggggcgtt ttgtgcccca gcaataactg gcagcatggc 3300
atacctgcag taccccttac aatattaaag caaagttttt attctaaaac agaataaaac 3360
tgttcaataa aaaatgctcg tcaaagttc                                   3389
```

<210> 100

<211> 463

<212> PRT

<213> Homo sapiens

<400> 100

Met Ser Gly Gly Thr Pro Tyr Ile Gly Ser Lys Ile Ser Leu Ile Ser

```
    1                  5                      10                     15
 Lys Ala Glu Ile Arg Tyr Glu Gly Ile Leu Tyr Thr Ile Asp Thr Glu
                 20                     25                     30
 Asn Ser Thr Val Ala Leu Ala Lys Val Arg Ser Phe Gly Thr Glu Asp
                 35                     40                     45
 Arg Pro Thr Asp Arg Pro Ile Pro Pro Arg Asp Glu Val Phe Glu Tyr
                 50                     55                     60
 Ile Ile Phe Arg Gly Ser Asp Ile Lys Asp Leu Thr Val Cys Glu Pro
 65                     70                     75                     80
 Pro Lys Pro Gln Cys Ser Leu Pro Gln Asp Pro Ala Ile Val Gln Ser
                 85                     90                     95
 Ser Leu Gly Ser Ser Thr Ser Ser Phe Gln Ser Met Gly Ser Tyr Gly
                 100                    105                    110
 Pro Phe Gly Arg Met Pro Thr Tyr Ser Gln Phe Ser Pro Ser Ser Leu
                 115                    120                    125
 Val Gly Gln Gln Phe Gly Ala Val Gly Val Ala Gly Ser Ser Leu Thr
                 130                    135                    140
 Ser Phe Gly Thr Glu Thr Ser Asn Ser Gly Thr Leu Pro Gln Ser Ser
 145                    150                    155                    160
 Ala Val Gly Ser Ala Phe Thr Gln Asp Thr Arg Ser Leu Lys Thr Gln
                 165                    170                    175
 Leu Ser Gln Gly Arg Ser Ser Pro Gln Leu Asp Pro Leu Arg Lys Ser
                 180                    185                    190
 Pro Thr Met Glu Gln Ala Val Gln Thr Ala Ser Ala His Leu Pro Ala
                 195                    200                    205
 Pro Ala Ala Val Gly Arg Arg Ser Pro Val Ser Thr Arg Pro Leu Pro
                 210                    215                    220
 Ser Ala Ser Gln Lys Ala Gly Glu Asn Gln Glu His Arg Gln Ala Glu
 225                    230                    235                    240
 Val His Lys Val Ser Arg Pro Glu Asn Glu Gln Leu Arg Asn Asp Asn
                 245                    250                    255
 Lys Arg Gln Val Ala Pro Gly Ala Pro Ser Ala Pro Arg Arg Gly Arg
                 260                    265                    270
 Gly Gly His Arg Gly Gly Arg Gly Arg Phe Gly Ile Arg Arg Asp Gly
                 275                    280                    285
 Pro Met Lys Phe Glu Lys Asp Phe Asp Phe Glu Ser Ala Asn Ala Gln
```

```
        290                    295                    300
Phe Asn Lys Glu Glu Ile Asp Arg Glu Phe His Asn Lys Leu Lys Leu
305                    310                    315                    320
Lys Glu Asp Lys Leu Glu Lys Gln Glu Lys Pro Val Asn Gly Glu Asp
                     325                    330                    335
Lys Gly Asp Ser Gly Val Asp Thr Gln Asn Ser Glu Gly Asn Ala Asp
                     340                    345                    350
Glu Glu Asp Pro Leu Gly Pro Asn Cys Tyr Tyr Asp Lys Thr Lys Ser
               355                    360                    365
Phe Phe Asp Asn Ile Ser Cys Asp Asp Asn Arg Glu Arg Arg Pro Thr
         370                    375                    380
Trp Ala Glu Glu Arg Arg Leu Asn Ala Glu Thr Phe Gly Ile Pro Leu
385                    390                    395                    400
Arg Pro Asn Arg Gly Arg Gly Gly Tyr Arg Gly Arg Gly Gly Leu Gly
                     405                    410                    415
Phe Arg Gly Gly Arg Gly Arg Gly Gly Gly Arg Gly Gly Thr Phe Thr
                     420                    425                    430
Ala Pro Arg Gly Phe Arg Gly Gly Phe Arg Gly Gly Arg Gly Gly Arg
               435                    440                    445
Glu Phe Ala Asp Phe Glu Tyr Arg Lys Asp Asn Lys Val Ala Ala
         450                    455                    460
```

<210> 101
<211> 2284
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (128)..(1936)

<400> 101
```
tgcaagggtg tacaactatg agcctttgac acagctcaag aatgtcagag caaattacta  60
tggaaaatac attgctctaa gagggacagt ggttcgtgtc agtaatataa agcctctttg  120
caccaagatg gctttctttt gtgctgcatg tggagaaatt cagagctttc tcttccaga  180
```

```
tggaaaatac agtcttccca caaagtgtcc tgtgcctgtg tgtcgaggca ggtcatttac 240
tgctctccgc agctctcctc tcacagttac gatggactgg cagtcaatca aaatccagga 300
attgatgtct gatgatcaga gagaagcagg tcggattcca cgaacaatag aatgtgagct 360
tgttcatgat cttgtggata gctgtgtccc gggagacaca gtgactatta ctggaattgt 420
caaagtctca aatgcggaag aaggttctcg aaataagaat gacaagtgta tgttcctttt 480
gtatattgaa gcaaattcta ttagtaatag caaaggacag aaaacaaaga gttctgagga 540
tgggtgtaag catggaatgt tgatggagtt ctcacttaaa gacctttatg ccatccaaga 600
gattcaagct gaagaaaacc tgtttaaact cattgtcaac tcgctttgcc ctgtcatttt 660
tggtcacgaa cttgttaaag caggtttggc attagcactc tttggaggaa gccagaaata 720
cgcagatgac aaaaacagaa ttccaattcg gggagacccc cacatccttg ttgttggaga 780
tccaggccta ggaaaaagtc aaatgctaca ggcagcgtgc aatgttgccc cacgtggcgt 840
gtatgtttgt ggtaacacca cgaccacctc tggtctgacg gtaactcttt caaaagatag 900
ttcctctgga gattttgctt tggaagctgg tgccctggta cttggtgatc aaggtatttg 960
tggaatcgat gaatttgata agatggggaa tcaacatcaa gccttgttgg aagccatgga 1020
gcagcaaagt attagtcttg ctaaggctgg tgtggtttgt agccttcctg caagaacttc 1080
cattattgct gctgcaaatc cagttggagg acattacaat aaagccaaaa cagtttctga 1140
gaatttaaaa atggggagtg cactactatc cagatttgat ttggtcttta tcctgttaga 1200
tactccaaat gagcatcatg atcacttact ctctgaacat gtgattgcaa taagagctgg 1260
aaagcagaga accattagca gtgccacagt agctcgtatg aatagtcaag attcaaatac 1320
ttccgtactt gaagtagttt ctgagaagcc attatcagaa agactaaagg tggttcctgg 1380
agaaacaata gatcccattc cccaccagct attgagaaag tacattggct atgctcggca 1440
gtatgtgtac ccaaggctat ccacagaagc tgctcgagtt cttcaagatt tttaccttga 1500
gctccggaaa cagagccaga ggttaaatag ctcaccaatc actaccaggc agctggaatc 1560
tttgattcgt ctgacagagg cacgagcaag gttggaattg agagaggaag caaccaaaga 1620
agacgctgag gatatagtgg aaattatgaa atatagcatg ctaggaactt actctgatga 1680
atttgggaac ctagattttg agcgatccca gcatggttct ggaatgagca acaggtcaac 1740
agcgaaaaga tttatttctg ctctcaacaa cgttgctgaa agaacttata ataatatatt 1800
tcaatttcat caacttcggc agattgccaa agaactaaac attcaggttg ctgattttga 1860
aaattttatt ggatcactaa atgaccaggg ttacctcttg aaaaaaggcc caaaagttta 1920
ccagcttcaa actatgtaaa aggacttcac caagttaggg cctcctgggt ttattgcaga 1980
ttaaagccat ctcagtgaag atatgcgtgc acgcacagac agacagacac acacacacac 2040
acacacacac acacacacac acacacacac acagtcaaat actgttctct gaaaaatgat 2100
gtcccaaaag tattataata ggaaaaaagc attaaatata ataaactaat ttaagaagtg 2160
ataaagtctc cagatgcagt agctcacact gtaatcacag tgactcagga ggctgaggtg 2220
agaggattcc ttgaggccag ggttcgagac caaccttggg caacatagca agaccccatt 2280
tctt                                                               2284
```

<210> 102

<211> 603

<212> PRT

<213> Homo sapiens

<400> 102

Met	Ala	Phe	Leu	Cys	Ala	Ala	Cys	Gly	Glu	Ile	Gln	Ser	Phe	Pro	Leu
1				5					10					15	

Pro Asp Gly Lys Tyr Ser Leu Pro Thr Lys Cys Pro Val Pro Val Cys
           20   25   30

Arg Gly Arg Ser Phe Thr Ala Leu Arg Ser Ser Pro Leu Thr Val Thr
           35   40   45

Met Asp Trp Gln Ser Ile Lys Ile Gln Glu Leu Met Ser Asp Asp Gln
       50   55   60

Arg Glu Ala Gly Arg Ile Pro Arg Thr Ile Glu Cys Glu Leu Val His
65   70   75   80

Asp Leu Val Asp Ser Cys Val Pro Gly Asp Thr Val Thr Ile Thr Gly
           85   90   95

Ile Val Lys Val Ser Asn Ala Glu Glu Gly Ser Arg Asn Lys Asn Asp
           100   105   110

Lys Cys Met Phe Leu Leu Tyr Ile Glu Ala Asn Ser Ile Ser Asn Ser
       115   120   125

Lys Gly Gln Lys Thr Lys Ser Ser Glu Asp Gly Cys Lys His Gly Met
       130   135   140

Leu Met Glu Phe Ser Leu Lys Asp Leu Tyr Ala Ile Gln Glu Ile Gln
145   150   155   160

Ala Glu Glu Asn Leu Phe Lys Leu Ile Val Asn Ser Leu Cys Pro Val
           165   170   175

Ile Phe Gly His Glu Leu Val Lys Ala Gly Leu Ala Leu Ala Leu Phe
           180   185   190

Gly Gly Ser Gln Lys Tyr Ala Asp Asp Lys Asn Arg Ile Pro Ile Arg
           195   200   205

Gly Asp Pro His Ile Leu Val Val Gly Asp Pro Gly Leu Gly Lys Ser
       210   215   220

Gln Met Leu Gln Ala Ala Cys Asn Val Ala Pro Arg Gly Val Tyr Val
225   230   235   240

Cys Gly Asn Thr Thr Thr Thr Ser Gly Leu Thr Val Thr Leu Ser Lys
                245   250   255

Asp Ser Ser Ser Gly Asp Phe Ala Leu Glu Ala Gly Ala Leu Val Leu
                260   265   270

Gly Asp Gln Gly Ile Cys Gly Ile Asp Glu Phe Asp Lys Met Gly Asn
            275   280   285

Gln His Gln Ala Leu Leu Glu Ala Met Glu Gln Gln Ser Ile Ser Leu
            290   295   300

Ala Lys Ala Gly Val Val Cys Ser Leu Pro Ala Arg Thr Ser Ile Ile
305   310   315   320

Ala Ala Ala Asn Pro Val Gly Gly His Tyr Asn Lys Ala Lys Thr Val
                325   330   335

Ser Glu Asn Leu Lys Met Gly Ser Ala Leu Leu Ser Arg Phe Asp Leu
                340   345   350

Val Phe Ile Leu Leu Asp Thr Pro Asn Glu His His Asp His Leu Leu
            355   360   365

Ser Glu His Val Ile Ala Ile Arg Ala Gly Lys Gln Arg Thr Ile Ser
            370   375   380

Ser Ala Thr Val Ala Arg Met Asn Ser Gln Asp Ser Asn Thr Ser Val
385   390   395   400

Leu Glu Val Val Ser Glu Lys Pro Leu Ser Glu Arg Leu Lys Val Val
                405   410   415

Pro Gly Glu Thr Ile Asp Pro Ile Pro His Gln Leu Leu Arg Lys Tyr
            420   425   430

Ile Gly Tyr Ala Arg Gln Tyr Val Tyr Pro Arg Leu Ser Thr Glu Ala
            435   440   445

Ala Arg Val Leu Gln Asp Phe Tyr Leu Glu Leu Arg Lys Gln Ser Gln
            450   455   460

Arg Leu Asn Ser Ser Pro Ile Thr Thr Arg Gln Leu Glu Ser Leu Ile
465   470   475   480

Arg Leu Thr Glu Ala Arg Ala Arg Leu Glu Leu Arg Glu Glu Ala Thr
                485   490   495

Lys Glu Asp Ala Glu Asp Ile Val Glu Ile Met Lys Tyr Ser Met Leu
                500   505   510

```
Gly Thr Tyr Ser Asp Glu Phe Gly Asn Leu Asp Phe Glu Arg Ser Gln
        515                 520                 525
His Gly Ser Gly Met Ser Asn Arg Ser Thr Ala Lys Arg Phe Ile Ser
        530                 535                 540
Ala Leu Asn Asn Val Ala Glu Arg Thr Tyr Asn Asn Ile Phe Gln Phe
545                 550                 555                 560
His Gln Leu Arg Gln Ile Ala Lys Glu Leu Asn Ile Gln Val Ala Asp
                565                 570                 575
Phe Glu Asn Phe Ile Gly Ser Leu Asn Asp Gln Gly Tyr Leu Leu Lys
            580                 585                 590
Lys Gly Pro Lys Val Tyr Gln Leu Gln Thr Met
            595                 600
```

<210> 103

<211> 3408

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (725)..(1513)

<400> 103

```
gattcacgta gaccttgtca ggaaattggt cactatccat ctaggcccta gaagtgagag 60
gaggaatctt acgaactcat tttctagttg ctttgtattc aaatcttagt tgttaattat 120
cttgttctag taatcaccta aaatattaga cacttaaaat gttggggaaa cgtaagcgtg 180
tggtgttgac aattaataga ctggcccct gaatctccag acaaccaata tcacttaaat 240
aagtgatagt cttaatacta gttttagac tagtcattgg agaacagatg attgatgtct 300
tagggccgga gaaacgcaga cggcgtacca cacaggaaaa gatcgcaatt gttcagcaga 360
gctttgaacc ggggatgacg gtctccctcg ttgcccggca acatggtgta gcagccagcc 420
agttatttct ctggcgtaag caataccagg aaggaagtct tactgctgtc gccgccggag 480
aacaggttgt tcctgcctct gaacttgctg ccgccatgaa gcagattaaa gaactccagc 540
gcctgctcgg caagaaaacg atggaaaatg aactcctcaa agaagccgtt gaatatggac 600
gggcaaaaaa gtggatagcg cacgcgccct tattgcccgg ggatggggag taagcttagt 660
cagccgttgt ctccgggtgt cgcgtgcgca gttgcacgtc attctcagac gaaccgatga 720
```

```
ctggatggat ggccgccgca gtcgtcacac tgatgatacg gatgtgcttc tccgtataca 780

ccatgttatc ggagagctgc caacgtatgg ttatcgtcgg gtatgggcgc tgcttcgcag 840

acaggcagaa cttgatggta tgcctgcgat caatgccaaa cgtgtttacc ggatcatgcg 900

ccagaatgcg ctgttgcttg agcgaaaacc tgctgtaccg ccatcgaaac gggcacatac 960

aggcagagtg gccgtgaaag aaagcaatca gcgatggtgc tctgacgggt tcgagttctg 1020

ctgtgataac ggagagagac tgcgtgtcac gttcgcgctg gactgctgtg atcgtgaggc 1080

actgcactgg gcggtcacta ccggcggctt caacagtgaa acagtacagg acgtcatgct 1140

gggagcggtg gaacgccgct tcggcaacga tcttccgtcg tctccagtgg agtggctgac 1200

ggataatggt tcatgctacc gggctaatga aacacgccag ttcgcccgga tgttgggact 1260

tgaaccgaag aacacggcgg tgcggagtcc ggagagtaac ggaatagcag agagcttcgt 1320

gaaaacgata aagcgtgact acatcagtat catgcccaaa ccagacgggt taacggcagc 1380

aaagaacctt gcagaggcgt tcgagcatta taacgaatgg catccgcata gtgcgctggg 1440

ttatcgctcg ccacgggaat atctgcggca gcgggcttgt aatgggttaa gtgataacag 1500

atgtctggaa atataggggc aaatccaatt aaggacaagc ttgacattat taagaaactt 1560

gaggaaggca tctctttcaa aaaactttcc gtggtgtacg gaattggtga atccacagtt 1620

cgtgatatta aaaagaacaa agaaaggatt ataaactatg caaacagttc agatcctacc 1680

agtggagtat ccaaacgtaa atctatgaag tcatcaacat acgaggagct tgatagagtt 1740

atgatagagt ggtttaacca acagaaaaca gatgggattc cagtgtccgg aacgatttgt 1800

gcaatacaag ccaagttctt ttttgatgct ttgggaatgg aaggtgattt taatgcatcg 1860

tcaggctggc taactcgatt taagcagcgc catggtattc caaaggctgc tggtaaagga 1920

acaaaattaa aaggagatga aactgctgcc agagaatttt gtggtagctt tcaggaattt 1980

gttgaaaaag agaatctaca accagagcaa atttatggtg ctgatcaaac tggattgttt 2040

tggaaatgtc taccatcaag gacattaact cttgaaactg accaaagtac ttctgggtgt 2100

aggtcaagca gagagagaat catcattatg tgttgcgcaa atgccacagg tttacacaaa 2160

cttaatcttt gtgttgtggg gaaggccaaa aagccccggg cattcaaagg cactgacctt 2220

tcaaaccttc ctgtgacata ttacagtcaa aaaggtgcat ggatagaaca gtctgttttc 2280

agacagtggt ttgagaagta ctttgtgcca caggtacaga agcatttgaa atccaaggga 2340

cttttagaaa aagcagtgct tcttttagat ttcccccag cacgtccaaa tgaagaaatg 2400

ttgagttcag atgatggcag aataattgtg aagtatttgc caccaaatgt cacaagtctg 2460

attcaaccaa tgagccaggg agttctagcc actgtaaaaa gatactatcg agcaggactt 2520

ctccagaaat acatggatga aggaaatgac ccaaaaatat tttggaagaa cttgacagtg 2580

ttggatgcaa tttatgaagt gtcaagagct tggaacatgg taaaatcaag taccataacc 2640

aaagcatgga aaaacttttt ccctggcaat gaagagaatt caggtatgaa cattgatgaa 2700

ggagccattt tagcagctaa tttagcaaca gttttacaga acacagaaga atgtgaacat 2760

gttgacattg agaatattga tcagtggttc gactctcgga gcagtgactc aagctgtcag 2820

gtgctgactg acagtgaaag tgctgaggac cagaccaagg ctgctgagca aaagccttcc 2880
```

agtaagagta gaaaaacaga actgaatcca gagaagcata ttagccataa agcggcactt 2940

gaatggactg aaaatttact ggattatctt gaacaacaag atgacatgct tctgtctgat 3000

aaattggtat taaggaggct tcggaccata ataagaaaaa aacagaagat ccaaataaac 3060

aaaaatcatt aataaggctc ttaagtattt cagtgtatct gcatctttgt gactatctgc 3120

agtgaaactt tgcttgtttg aagtcctgtg gattccaaag ccaaatacat tttataaatg 3180

attttggaat tagatgtcag tttggattac ttaaattaca actctttaat gttgactcta 3240

gtcattgggc attgacgtgt aacttgtctt tctactgttt ctaatatcta ttaattagat 3300

cataaggtac ctgaggccag ggatcttgtg tctgttgtgc ctgaatttgg cgtgtctaat 3360

aaaggcccat gcacactata ggcactcaat aaaacttaca tttttatg   3408

<210> 104

<211> 263

<212> PRT

<213> Homo sapiens

<400> 104

Met Asp Gly Arg Arg Ser Arg His Thr Asp Asp Thr Asp Val Leu Leu
1   5   10   15

Arg Ile His His Val Ile Gly Glu Leu Pro Thr Tyr Gly Tyr Arg Arg
                20   25   30

Val Trp Ala Leu Leu Arg Arg Gln Ala Glu Leu Asp Gly Met Pro Ala
            35   40   45

Ile Asn Ala Lys Arg Val Tyr Arg Ile Met Arg Gln Asn Ala Leu Leu
        50   55   60

Leu Glu Arg Lys Pro Ala Val Pro Pro Ser Lys Arg Ala His Thr Gly
65   70   75   80

Arg Val Ala Val Lys Glu Ser Asn Gln Arg Trp Cys Ser Asp Gly Phe
                85   90   95

Glu Phe Cys Cys Asp Asn Gly Glu Arg Leu Arg Val Thr Phe Ala Leu
                100   105   110

Asp Cys Cys Asp Arg Glu Ala Leu His Trp Ala Val Thr Thr Gly Gly
            115   120   125

Phe Asn Ser Glu Thr Val Gln Asp Val Met Leu Gly Ala Val Glu Arg
        130   135   140

Arg Phe Gly Asn Asp Leu Pro Ser Ser Pro Val Glu Trp Leu Thr Asp

```
            145                 150                 155                 160
Asn Gly Ser Cys Tyr Arg Ala Asn Glu Thr Arg Gln Phe Ala Arg Met
                    165             170                 175
Leu Gly Leu Glu Pro Lys Asn Thr Ala Val Arg Ser Pro Glu Ser Asn
                180             185                 190
Gly Ile Ala Glu Ser Phe Val Lys Thr Ile Lys Arg Asp Tyr Ile Ser
            195                 200                 205
Ile Met Pro Lys Pro Asp Gly Leu Thr Ala Ala Lys Asn Leu Ala Glu
        210                 215                 220
Ala Phe Glu His Tyr Asn Glu Trp His Pro His Ser Ala Leu Gly Tyr
225                 230                 235                 240
Arg Ser Pro Arg Glu Tyr Leu Arg Gln Arg Ala Cys Asn Gly Leu Ser
                245                 250                 255
Asp Asn Arg Cys Leu Glu Ile
                260
```

<210> 105
<211> 3338
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (201)..(1904)

<400> 105

```
gcaggggcca gacccggacg gctccagagc ctccagagcc tccgggtctg ggcggcgctt 60
cggctcctcc cgagccgcct gctagccccg cgccgcactc catccccaca ggctggggac 120
gggcccggtg cggctgtgtg ggttcgggag cggagttgca gaatccaagg acccattttg 180
ttctttctcc gcactgcttt atgggaggca ttatggcccc caaagacata atgacaaata 240
ctcatgctaa atccatcctc aattcaatga actccctcag gaagagcaat accctctgtg 300
atgtgacatt gagagtagag cagaaagact tccctgccca tcggattgtg ctggctgcct 360
gtagtgatta cttctgtgcc atgttcacta gtgagctctc agagaagggg aaaccttatg 420
ttgacatcca aggtttgact gcctctacca tggaaatttt attggacttt gtgtacacag 480
aaacggtaca tgtgacagtg gagaatgtac aagaactgct tcctgcagcc tgtctgcttc 540
```

```
agttgaaagg tgtgaaacaa gcctgctgtg agttcttaga aagtcagttg gacccttcta 600

attgcctggg tattagggat tttgctgaaa cccacaattg tgttgacctg atgcaagcag 660

ctgaggtttt tagccagaag cattttcctg aagtggtaca gcatgaagag ttcattcttc 720

tgagtcaagg agaggtggaa aagctaatca agtgcgacga aattcaggtg gattctgaag 780

agccagtctt tgaggctgtc atcaactggg tgaagcatgc caagaaagag cgggaagaat 840

ccttgcctaa cctgctacag tatgtgcgga tgcccctact aacccccagg tatatcacag 900

atgtaataga tgctgagcct ttcatccgct gtagtttaca atgcagggat ctggttgatg 960

aagcaaagaa gtttcatctg aggcctgaac ttcggagtca gatgcaggga cccaggacaa 1020

gggctcgcct aggagccaat gaagtgcttt tggtggttgg gggctttgga agccagcagt 1080

ctcccattga tgtggtagag aaatatgacc ccaagactca ggagtggagc tttttgccaa 1140

gcatcactcg taagagacgt tatgtggcct cagtgtccct tcatgaccgg atctacgtca 1200

ttggtggcta tgatggccgt tcccgcctta gttcagtgga atgtctagac tacacagcag 1260

atgaggatgg ggtctggtat tctgtggccc ctatgaatgt ccgacgaggt cttgctggag 1320

ccaccaccct gggagatatg atctatgtct ctggaggctt tgatggaagc aggcgtcaca 1380

ccagtatgga gcgctatgat ccaaacattg accagtggag catgctgggg gatatgcaga 1440

cagcccggga aggtgccgga ctcgtagtgg ccagtggagt gatctactgt ctaggaggat 1500

atgacggctt gaatatctta aattcagttg agaaatacga ccctcataca ggacattgga 1560

ctaatgttac accaatggcc accaagcgtt ctggtgcagg agtagccctg ctgaatgacc 1620

atatttatgt ggtgggggga tttgatggta cagcccacct ttcttccgtt gaagcataca 1680

acattcgcac tgattcctgg acaactgtca ccagtatgac cactccacga tgctatgtag 1740

gggccacagt gcttcggggg agactctatg caattgcagg atatgatggt aattccctgc 1800

taagtagcat tgaatgttat gaccctatca tcgacagctg ggaagtcgtg acatccatgg 1860

gaacccagcg ctgtgatgct ggtgtttgtg ttctccgcga gaagtgacca ttgttggagc 1920

accatccaga gctagtgacc agtccagtgg acagttagtg ggagtatcaa aaatcctttc 1980

cagaatgtct gtttctcact atgtgcaccg ggtgattaca ggcaccagtg cagtgatgat 2040

tgtacttatt tgacacatac tccccgtcgt cctggttctt gttcctgaga agggtgggta 2100

acagatattc caggaaaaag aatgcacatt gaatggatgt gagagaccac attgcctctc 2160

ccactgcttt ggggagcact ttcctgtcat ttctaactta ccacatgctt ggtgtactat 2220

atgtacgttg tgcctcatat gttgcaaaga actaaggtga gtatagccta ctagatatgg 2280

gcaatatcca gcctagatga ttggaaagat accagtttaa gtaaacttgg taaaatccaa 2340

gtcttttttt tttttccag gaacaactac attttctcat atacaggtag ctaggggcaa 2400

cacagttcca ttctagaggg aaacaaaagg gagagcccca caaaactttg gggacaaggg 2460

agagagagac tcatctgaca cttcttttgg aggtcaggat ttgtatatca gaattgaagt 2520

tagaattaag tgaattaaac tgaatttgat tgtgagtgaa cctagaacag cactgaagta 2580

ttacataacc tggaagactg agaagggtat attatttgaa ggatcttttt atttccccga 2640

ggtctttcgc actggagaca gcataaaaga gtgaacaaat gttgggatga gagaagatga 2700
```

```
catcaatgtg ggagttcagt ataactgggg ataaactaga agaacctgtg attttacagt 2760
catcttatta cctgccaggg ctcatctagc catggcaatg tttgccttga atggggggtga 2820
aagcctttct ttgttggatc aaatactact acactattac acttccacac tatttatttg 2880
gggatgggct gggagtgaca gtagcctagt agttcagcta cctgattact gccccattct 2940
tttagaagca catgtctgcc aaggagtggt ttgtactgct gtgtttggta catctagtct 3000
tttttctgct ataagttttc cttacctgtc ctttagtgta gattttattc atcacaggac 3060
agaataatca aggacaacca aaatcctttt gttagtttca gtacctcagc tatcaacatt 3120
tctgagctac cattcaatgt tcctctgtgt catggagtga aattcttgtt ttgtgggtat 3180
taggagtgtg ggaatgtgat aacctaaaca acctttgctc tgaaattcca tttttccctc 3240
tttccctgag ttgtattgac ctacagagtt aatttccttt gtattttttt aagaaaatat 3300
taaaaatcaa cggtctcaaa tgccgagagt ttgtggct                        3338
```

<210> 106

<211> 568

<212> PRT

<213> Homo sapiens

<400> 106

```
Met Gly Gly Ile Met Ala Pro Lys Asp Ile Met Thr Asn Thr His Ala
 1               5                  10                  15
Lys Ser Ile Leu Asn Ser Met Asn Ser Leu Arg Lys Ser Asn Thr Leu
                20                  25                  30
Cys Asp Val Thr Leu Arg Val Glu Gln Lys Asp Phe Pro Ala His Arg
            35                  40                  45
Ile Val Leu Ala Ala Cys Ser Asp Tyr Phe Cys Ala Met Phe Thr Ser
        50                  55                  60
Glu Leu Ser Glu Lys Gly Lys Pro Tyr Val Asp Ile Gln Gly Leu Thr
65                  70                  75                  80
Ala Ser Thr Met Glu Ile Leu Leu Asp Phe Val Tyr Thr Glu Thr Val
                85                  90                  95
His Val Thr Val Glu Asn Val Gln Glu Leu Leu Pro Ala Ala Cys Leu
            100                 105                 110
Leu Gln Leu Lys Gly Val Lys Gln Ala Cys Cys Glu Phe Leu Glu Ser
        115                 120                 125
Gln Leu Asp Pro Ser Asn Cys Leu Gly Ile Arg Asp Phe Ala Glu Thr
```

```
            130                    135                    140
His Asn Cys Val Asp Leu Met Gln Ala Ala Glu Val Phe Ser Gln Lys
145                    150                    155                    160
His Phe Pro Glu Val Val Gln His Glu Glu Phe Ile Leu Leu Ser Gln
                    165                    170                    175
Gly Glu Val Glu Lys Leu Ile Lys Cys Asp Glu Ile Gln Val Asp Ser
                    180                    185                    190
Glu Glu Pro Val Phe Glu Ala Val Ile Asn Trp Val Lys His Ala Lys
                    195                    200                    205
Lys Glu Arg Glu Glu Ser Leu Pro Asn Leu Leu Gln Tyr Val Arg Met
          210                    215                    220
Pro Leu Leu Thr Pro Arg Tyr Ile Thr Asp Val Ile Asp Ala Glu Pro
225                    230                    235                    240
Phe Ile Arg Cys Ser Leu Gln Cys Arg Asp Leu Val Asp Glu Ala Lys
                    245                    250                    255
Lys Phe His Leu Arg Pro Glu Leu Arg Ser Gln Met Gln Gly Pro Arg
                    260                    265                    270
Thr Arg Ala Arg Leu Gly Ala Asn Glu Val Leu Leu Val Val Gly Gly
          275                    280                    285
Phe Gly Ser Gln Gln Ser Pro Ile Asp Val Val Glu Lys Tyr Asp Pro
          290                    295                    300
Lys Thr Gln Glu Trp Ser Phe Leu Pro Ser Ile Thr Arg Lys Arg Arg
305                    310                    315                    320
Tyr Val Ala Ser Val Ser Leu His Asp Arg Ile Tyr Val Ile Gly Gly
                    325                    330                    335
Tyr Asp Gly Arg Ser Arg Leu Ser Ser Val Glu Cys Leu Asp Tyr Thr
                    340                    345                    350
Ala Asp Glu Asp Gly Val Trp Tyr Ser Val Ala Pro Met Asn Val Arg
          355                    360                    365
Arg Gly Leu Ala Gly Ala Thr Thr Leu Gly Asp Met Ile Tyr Val Ser
          370                    375                    380
Gly Gly Phe Asp Gly Ser Arg Arg His Thr Ser Met Glu Arg Tyr Asp
385                    390                    395                    400
Pro Asn Ile Asp Gln Trp Ser Met Leu Gly Asp Met Gln Thr Ala Arg
                    405                    410                    415
Glu Gly Ala Gly Leu Val Val Ala Ser Gly Val Ile Tyr Cys Leu Gly
```

```
                 420                425                430
Gly Tyr Asp Gly Leu Asn Ile Leu Asn Ser Val Glu Lys Tyr Asp Pro
             435                440                445
His Thr Gly His Trp Thr Asn Val Thr Pro Met Ala Thr Lys Arg Ser
         450                455                460
Gly Ala Gly Val Ala Leu Leu Asn Asp His Ile Tyr Val Val Gly Gly
465                470                475                480
Phe Asp Gly Thr Ala His Leu Ser Ser Val Glu Ala Tyr Asn Ile Arg
                 485                490                495
Thr Asp Ser Trp Thr Thr Val Thr Ser Met Thr Thr Pro Arg Cys Tyr
             500                505                510
Val Gly Ala Thr Val Leu Arg Gly Arg Leu Tyr Ala Ile Ala Gly Tyr
             515                520                525
Asp Gly Asn Ser Leu Leu Ser Ser Ile Glu Cys Tyr Asp Pro Ile Ile
         530                535                540
Asp Ser Trp Glu Val Val Thr Ser Met Gly Thr Gln Arg Cys Asp Ala
545                550                555                560
Gly Val Cys Val Leu Arg Glu Lys
                 565
```

<210> 107

<211> 2925

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (72)..(1160)

<400> 107

```
gacggcgggt gcccgcgcct cagagttact gatttattct tgagattcct ctactctcgt 60
tatctgacct catggatgaa cttcaggatg ttcagctcac agagatcaaa ccacttctaa 120
atgataagga acatgatata gaaacaactc atggtgtggt ccacgtcact ataagaggct 180
tacccaaagg aaacagacca gttatactaa catatcatga cattggcctc aaccataaat 240
cctgttccaa tgcattcttt aactttgagg atatgcaaga gatcacccag cactttgctg 300
```

```
tctgtcatgt ggatgcccca ggccagcagg aaggtgcacc ctctttccca acagggtatc 360
agtaccccac aatggatgag ctggctgaaa tgctgcctcc tgttcttacc cacctaagcc 420
tgaaaagcat cattggaatt ggagttggag ctggagctta catcctcagc agatttgcac 480
tcaaccatcc agagcttgtg gaaggccttg tgctcattaa tgttgaccct tgcgctaaag 540
gctggattga ctgggcagct tccaaactct ctggcctgac aaccaatgtt gtggacatta 600
ttttggctca tcactttggg caggaagagt tacaggccaa cctggacctg atccaaacct 660
acagaatgca tattgcccaa gacatcaacc aagacaacct gcagctcttc ttgaattcct 720
acaatggacg cagagacctg gagatcgaaa gacccatact gggccaaaat gataacaaat 780
caaaaacatt aaagtgttct actttactgg tggtagggga caattcgcct gcagttgagg 840
ctgtggtcga atgcaattcc cgcctgaacc ctataaatac aactttgcta aagatggcgg 900
actgtggggg actgccccag gtagttcagc ctgggaagct caccgaggcc ttcaagtact 960
ttttgcaggg aatgggctac ataccatctg ccagcatgac tcggctcgcc cgatcacgaa 1020
cccactcaac ctcgagtagc ctcggctctg gagaaagtcc cttcagccgg tctgtcacca 1080
gcaatcagtc agatggaact caagaatcct gtgagtcccc tgatgtcctg gacagacacc 1140
agaccatgga ggtgtcctgc taagcagatg ctcctcccct ggaccattgc aagtccattc 1200
ttcaaatgac cactccataa tataacattt catccagtaa actggcctct actatcttta 1260
actcatgcat ggccactgaa cctctctcta gtagcctgga tttatcattc tctctgcctg 1320
cccacccct tttttgtata gcccaagaac cacttccatg ccatactgta acattccaac 1380
atctttagct gatcagatct ctccatatcc tctcttgcca gcttttttccc gtgctccccc 1440
aactatgtat cagataagat tctttgatcc cgactctgtg tgtgcgagca cgcgtgtctg 1500
tgtttgtgtg tgcatagttc tgtggtttta gacacgcttt cttgtagtgc ttctgcaaaa 1560
aacaaaaaag ggacttattt tgcattctca atggtgtttt taagggaatt aggcagaaca 1620
gatttctagg ttgggtaggc cactgcattc tcttttgttt gcaaattggt caacaaaatt 1680
tgcaaagtga tttcaggaga gagcagcttt gaggaatgtg gaaaatcata attgccgtct 1740
ggaccattga ttgattgtga ccagtagcag aagggtgcct gttacataga gaggctcctt 1800
ctgtccaaat gaatttctgt atactcttct ataaataaaa gggaggaata tattctgctg 1860
gaagcccatg aaccatcgct gaggttctga tacaacatag agtttttcc aaggagtgaa 1920
tgtggtttaa ttactggact ctcttagcac aggaaggtgg aaacaaaatg ccaggcctct 1980
gctctgaaga gcaaaactgc tgtcgctgca gtatctgata ccagacatcc acatatccac 2040
aagaagtgcc tcttaggtct gtgacagaga gtgtgtctcc attcctcagt tcccagaaag 2100
gggagaggtt tggcctaaaa agcatgtaga tgggggagaa atgggtgggg ggagaggaac 2160
agccattaac acagtatcat gtttaacaag tatagccttg atttcagtag atgtaatgga 2220
agccaaatta aattgataca gaacccattt ctcagagtct ttttttttt ttgagacaga 2280
gtctcgctgt tacccaggct ggagtgcaat ggcgcaaact tggctcactg caacctctgc 2340
cccctgggtt caagcgattc tcctgcctca gcctcccgag tagctgagac tacaggcacc 2400
tgccaccata cccagctaag ttatgtattt ttagtaggga tggagtttca ccatgttggc 2460
```

```
caggctggtc tcaaactcct gacctcaggt gatccacctg cctcagcctc ccaaagtgct 2520
gggattacag gcatgagtca ttgctcccag ccattagaaa gattgttaat cctatgaact 2580
cccttttgta ggagagaaag ggccaatctg taggggtagc cctgtccagg taaagttgtt 2640
ttcagcctca tgtctactgt taggtgaggg agtcacagcc agacagagag tattgctgga 2700
gggtgagaga attgtggaga ccaactacca catagcaaga gcccagctct tgggagcatt 2760
gagatgtaag ctcagggtta cacagttcca aatcttggga aggggctttt cagacagact 2820
gtttgctttc tgctgagata aggaatgcat cactctgcca gagtatgact ttttacggat 2880
tattaaataa agctgcatat gtctcattgt taaaaaaaaa aaaag           2925
```

<210> 108

<211> 363

<212> PRT

<213> Homo sapiens

<400> 108

```
Met Asp Glu Leu Gln Asp Val Gln Leu Thr Glu Ile Lys Pro Leu Leu
 1               5                   10                  15

Asn Asp Lys Glu His Asp Ile Glu Thr Thr His Gly Val Val His Val
                20                  25                  30

Thr Ile Arg Gly Leu Pro Lys Gly Asn Arg Pro Val Ile Leu Thr Tyr
            35                  40                  45

His Asp Ile Gly Leu Asn His Lys Ser Cys Ser Asn Ala Phe Phe Asn
        50                  55                  60

Phe Glu Asp Met Gln Glu Ile Thr Gln His Phe Ala Val Cys His Val
65                  70                  75                  80

Asp Ala Pro Gly Gln Gln Glu Gly Ala Pro Ser Phe Pro Thr Gly Tyr
                85                  90                  95

Gln Tyr Pro Thr Met Asp Glu Leu Ala Glu Met Leu Pro Pro Val Leu
                100                 105                 110

Thr His Leu Ser Leu Lys Ser Ile Ile Gly Ile Gly Val Gly Ala Gly
            115                 120                 125

Ala Tyr Ile Leu Ser Arg Phe Ala Leu Asn His Pro Glu Leu Val Glu
        130                 135                 140

Gly Leu Val Leu Ile Asn Val Asp Pro Cys Ala Lys Gly Trp Ile Asp
145                 150                 155                 160
```

Trp Ala Ala Ser Lys Leu Ser Gly Leu Thr Thr Asn Val Val Asp Ile
                165   170   175
Ile Leu Ala His His Phe Gly Gln Glu Glu Leu Gln Ala Asn Leu Asp
            180   185   190
Leu Ile Gln Thr Tyr Arg Met His Ile Ala Gln Asp Ile Asn Gln Asp
        195   200   205
Asn Leu Gln Leu Phe Leu Asn Ser Tyr Asn Gly Arg Arg Asp Leu Glu
    210   215   220
Ile Glu Arg Pro Ile Leu Gly Gln Asn Asp Asn Lys Ser Lys Thr Leu
225   230   235   240
Lys Cys Ser Thr Leu Leu Val Val Gly Asp Asn Ser Pro Ala Val Glu
            245   250   255
Ala Val Val Glu Cys Asn Ser Arg Leu Asn Pro Ile Asn Thr Thr Leu
            260   265   270
Leu Lys Met Ala Asp Cys Gly Gly Leu Pro Gln Val Val Gln Pro Gly
        275   280   285
Lys Leu Thr Glu Ala Phe Lys Tyr Phe Leu Gln Gly Met Gly Tyr Ile
    290   295   300
Pro Ser Ala Ser Met Thr Arg Leu Ala Arg Ser Arg Thr His Ser Thr
305   310   315   320
Ser Ser Ser Leu Gly Ser Gly Glu Ser Pro Phe Ser Arg Ser Val Thr
            325   330   335
Ser Asn Gln Ser Asp Gly Thr Gln Glu Ser Cys Glu Ser Pro Asp Val
            340   345   350
Leu Asp Arg His Gln Thr Met Glu Val Ser Cys
    355   360

<210> 109
<211> 2677
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (240)..(1001)

<400> 109

gtttttacct aagcaagcct gggcaatggc gggcgtccct cccccagcct cgttgccgcc 60

ttgcagtttg atctcagact gctgtgctag caatcagcga gattccgtgg gcgtaggacc 120

ctctgagcca ggaactgaag ttaaaagatg aagaatgtga gaggctttca aaagtgcgag 180

atcaacttgg acaggaattg gaagaactca cagctagtct atttgaggaa gctcataaaa 240

tggtgagaga agcaaatatc aagcaggcaa cagcagaaaa acagctaaaa gaagcacaag 300

gaaaaattga tgtacttcaa gctgaagtag ctgcattgaa gacacttgta ttgtccagtt 360

ctccaacatc acctacgcag gagcctttgc caggtggaaa gacacctttt aaaaaggggc 420

atacaagaaa caaaagcaca agcagtgcta tgagtggcag tcatcaggac ctcagtgtga 480

tacagccaat tgtaaaagac tgcaaagagg ctgacttatc cttgtataat gaattccgat 540

tgtggaagga tgagcccaca atggacagga cgtgtccttt cttagacaaa atctaccagg 600

aagatatctt tccatgttta acattctcaa aaagtgagtt ggcttcagct gttctggagg 660

ctgtggaaaa caatactcta agcattgaac cagtgggatt acaacctatc cggtttgtga 720

aagcttctgc agttgaatgc ggaggaccaa aaaaatgtgc tctcactggc cagagtaagt 780

cctgtaaaca cagaattaaa ttaggggact caagcaacta ttattatatt tctccttttt 840

gcagatacag gatcacttct gtatgtaact tttttacata cattcgatac attcagcagg 900

gactcgtgaa acagcaggat gttgatcaga tgttttggga ggttatgcag ttgagaaaag 960

agatgtcatt ggcaaagctg ggttatttca aagaggaact ctgatgctct gcgtgggacc 1020

atgcctgaac tccccgaata actgaaaaat ggctgaatat ttttatggtt acttgatatt 1080

tatttccaag gagtgagcct aagacttttt tccccttttg caaattgctc taagaagtac 1140

catgatttct tttaaactga tctatgctgt gtttgcttat tctttagttg aacacactat 1200

gaagaattcc aggtgtacta gtgaatgtaa tttatagttg ccaaaaaaaa aaaacaaacc 1260

tgaaataaat aaatgttaga ttgaatgtgt gtacattttc tcttctagct ctgacatggc 1320

atttagggtt agcagaatgt attaaatagt aattttcaaa ctacacagta gcttccttcc 1380

ttgtgagagg caagaaagaa gtctgagtgg atagtactca ctttccaagg cccccacctc 1440

tagaatggct ttatttttat ctgtttccta tattgggttt caaaaaagat tttatttgaa 1500

gaaatacttc tgctgctaca aagtttgaaa gttactattt taattattct gctctctgta 1560

actgaaagaa tccctttatt ttggttattc attaaaatat aatagaaggc agtcagattt 1620

tatcccagag atgtattcct gagtgtcttg atatagtgta ttcatgtttt atatgtgttg 1680

accactatat tgtcattgga gggacataga tgtaaatgag tttgacgtgt gtcaaagggg 1740

tttaaagggg tgtggattga atgaatggta cgtgcgaagt atatgctgat tatagaacca 1800

cttgatctct gcattccaat ttgtaaaact gactcaactg gagaaattat aacaaagagg 1860

tttgtggtag aaatgtaata agtatagaaa agcaaaaaga aaagagaaac tgctttagtt 1920

tctgtttaga gaaagctgct gttaatattt ttggatagta gcctttcagc tttcagatat 1980

tttctactta catatgcata ttttgaaac aaaaagtagg cttttttttt gcttttaaa 2040

```
cctaaacatt aaatatattt tcccttgggt aaacctacac atcctaatcc ctgtttatag 2100
aattttaaca taatttaatt gtgtttggag atgaggtggt tttcagttta tttttcatat 2160
tataatgctg tgacgagtat ccttatctgt acacttctga acattgtgga gttctttcat 2220
gtggatgcct ggagataaaa ttgtgtcgag atatatatgt atttttaaat gtttgatctg 2280
cattgctaga ttgccatcca gaaaagttaa tcaatttgta ttcacagcag cagtgtacaa 2340
gagggctggt tttctgaaga taacattttt ttcagtcctg ttcagaggtt tggtcaatct 2400
tacctgtaga tgacttcagc caccaggctg gatgggagcc cacagacaaa aggacattgg 2460
tgtatgttat ggtgaaaacc atcagtacca tgcctagctc aagaatgtga aattgaacct 2520
gaaaaaaact ttgaacctac aattttatgt tctgaaaata gttattctaa tgtgagggca 2580
ttaataagaa tatgtaccat caaagcatca gaagattttc catacaaact aaaatcactt 2640
ttggagaaag tacctaaata aaaagagaaa caaatcc                          2677
```

<210> 110
<211> 254
<212> PRT
<213> Homo sapiens

<400> 110

```
Met Val Arg Glu Ala Asn Ile Lys Gln Ala Thr Ala Glu Lys Gln Leu
1               5                   10                  15

Lys Glu Ala Gln Gly Lys Ile Asp Val Leu Gln Ala Glu Val Ala Ala
            20                  25                  30

Leu Lys Thr Leu Val Leu Ser Ser Ser Pro Thr Ser Pro Thr Gln Glu
        35                  40                  45

Pro Leu Pro Gly Gly Lys Thr Pro Phe Lys Lys Gly His Thr Arg Asn
    50                  55                  60

Lys Ser Thr Ser Ser Ala Met Ser Gly Ser His Gln Asp Leu Ser Val
65                  70                  75                  80

Ile Gln Pro Ile Val Lys Asp Cys Lys Glu Ala Asp Leu Ser Leu Tyr
                85                  90                  95

Asn Glu Phe Arg Leu Trp Lys Asp Glu Pro Thr Met Asp Arg Thr Cys
            100                 105                 110

Pro Phe Leu Asp Lys Ile Tyr Gln Glu Asp Ile Phe Pro Cys Leu Thr
        115                 120                 125

Phe Ser Lys Ser Glu Leu Ala Ser Ala Val Leu Glu Ala Val Glu Asn
```

```
                130                  135                  140
Asn Thr Leu Ser Ile Glu Pro Val Gly Leu Gln Pro Ile Arg Phe Val
145                  150                  155                  160
Lys Ala Ser Ala Val Glu Cys Gly Gly Pro Lys Lys Cys Ala Leu Thr
                165                  170                  175
Gly Gln Ser Lys Ser Cys Lys His Arg Ile Lys Leu Gly Asp Ser Ser
                    180                  185                  190
Asn Tyr Tyr Tyr Ile Ser Pro Phe Cys Arg Tyr Arg Ile Thr Ser Val
                195                  200                  205
Cys Asn Phe Phe Thr Tyr Ile Arg Tyr Ile Gln Gln Gly Leu Val Lys
            210                  215                  220
Gln Gln Asp Val Asp Gln Met Phe Trp Glu Val Met Gln Leu Arg Lys
225                  230                  235                  240
Glu Met Ser Leu Ala Lys Leu Gly Tyr Phe Lys Glu Glu Leu
                245                  250
```

<210> 111
<211> 3448
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (104).. (1057)

<400> 111

```
gtgcgcgctc cctcggtgcg gcgggctgcg tgcgcgagtg ggaggtggca ggcctgcgac 60
tccggccttg tccgcgcccg ctctcggcgc gacgtctcca gccatgaacc ggtttggtac 120
ccggttggtg ggagccacgg cgacttcttc gccgccgccg aaggcccgca gcaatgaaaa 180
cctcgacaaa atagatatgt ctttggatga tatcatcaag ttgaatcgaa aggaagggaa 240
gaagcagaat tttccaagac taaatagaag actcctccag caaagtggtg cccagcaatt 300
caggatgaga gtgcgatggg gaatccaaca gaattctggt tttggtaaga ctagtctgaa 360
tcatagagga agagtaatgc ctggaaagag acgtcctaat ggagttatca ctggccttgc 420
agctaggaaa acgactggaa ttcgaaaagg aattagtcct atgaatcgtc cacctctaag 480
tgacaagaat atagaacaat attttccagt gttaaaaagg aaggcaaacc ttctgagaca 540
```

```
aaatgaaggg cagaggaaac cagtagcagt tctcaagaga cctagccagc taagcagaaa 600

aaataacatt ccagctaatt ttaccaggag tggaaataaa ttaaatcatc agaaagatac 660

tcgtcaggca acttttcttt tcagaagagg cctgaaggtg caggcccagt tgaatacaga 720

acaactgcta gacgatgtag tagcaaagag aactcgtcaa tggcggactt ccaccacaaa 780

tggagggatt ttgactgtat ctattgacaa tcctggagca gtgcaatgcc cagtaactca 840

gaaaccacga ttaactcgta ctgctgtacc ttcatttta acaaagcggg ggcaaagtga 900

cgtcaagaaa gttcctaaag gtgttcccct gcagtttgac ataaacagtg tcggaaaaca 960

gacagggatg acgttgaatg agcggtttgg gatcctgaag gaacaaagag ccactctcac 1020

atacaacaaa gggggaagcc gctttgtcac cgtgggatag gtcccatgtc aaaggaactt 1080

ttgagtgatg actctgagaa gttgaattgc ttgaagagtt catcacggaa attcaagaaa 1140

ctttacttca aaatattcac aaggctaaat aactcttatt tttatttttg aaggttttt 1200

tttttaaaaa aaaaaacgta taaataatg ccctgaaaga ataataggga ttatacctgt 1260

ctgttcttaa agatttcatg gttggctcag acagaacaat catctgtttg acttctttgg 1320

ttcctcatgc agcagaagga agacagaaag atagaaattg attatttta tgatagcggt 1380

attcaggatc tcatcacctt tgcccgtgtt ttagactttg tcatggtaaa tcctggtctt 1440

cataaacatg agtaggtccc ttggttgctg tcacttgccc tttaatagtg ttgatgtagt 1500

cagtgccgtt gccttttctt cattagagac acagaacaat gtattagaat ttccagctgt 1560

gggtttgaag acttaggggg acatccagaa cgtgcttcct ctttcagacg gtgtaaagtc 1620

ccctggaatt acacagcttt agtgctgagc ttttaacagg aaatgtggcc ctaggtatta 1680

gtcttagttt aaaatgttgg tgtttagaga ctgtaaatgc atattcacaa agttatctga 1740

tagggccttg gaggagaagg tccagtttta aaaaatgaca gtttgtgttt aataaatgaa 1800

ggcatgagag gaagtaagta gcaagttgaa ggacaggtag ttgagatgaa acacttcaaa 1860

accctggtta tagatgtact gtttggatgt agcatagtct tgagtctagc gtccacaaag 1920

aattattcaa atgatattta gaagaattat aactattaca ttgaatggag tcccttggat 1980

attttgatag taaaattaat agccataaag tcctagactt cttatttgaa gttaaaattt 2040

cttatttgaa aagttgaaat ttatgagctt tgaagattgc taaattaaat aatttatagc 2100

tccaaaaaca aaaatatact tgtatatgtc acagagaaaa aaaatgcaaa atttataata 2160

gagttacatt aaccttgttg tttacctttc actgatttct tatatggtat aaattaaagt 2220

tcaggcattt atggggagaa aaggccctcc ccaccgaccc gccacctgcc acctctgacg 2280

gagtgggaga agttagtctg tgctaagata gtactgagtc cccagatgtt gtgtactgta 2340

aattacagta taatgccaaa tgcagcaaaa tcttccagct gtacgttaca agtttggtca 2400

ttttgaagct tgacatttta gtttgccatt atgttaaaaa catctaaata ggtgttagtt 2460

tctcaggagt agattgttag tgttgacttt tcctgtaaag cagacatcgt tcttggcctg 2520

ccctgcattg tatactagat ttcattgttg tctctcatgc ttcttgagtt gcttcatggt 2580

ttatgctcgc catggaaagc tatcagtaac agtttcatgc ttataccaaa gaattaaatc 2640

tgatctttaa tatctgatat tttcctggta ctcgtactga taagggatta ttggaagtca 2700
```

gtcacagaat ttggaaataa attctagtct ctccttagct atttgatgct tttcatatag 2760

gccaagaact cattgcaaaa cattttttgca aggatgaatg cctgtatttg gtctaggaac 2820

agtacatttt agtctgattt agaattactg gtagcttatt ttaaagcaag gaaaagcagc 2880

tgagctcaag tttgctgtct ttagaatggt ttgtgaaaat atggtataaa ggtgttttca 2940

ttttcctgtt cttacctatt attgtataga gctattcatg ccattttttg ggaaaacttt 3000

aaaaattgcc ccaaatactg acattgagtg cattaaataa caaattatct ttgatacatt 3060

aaactttttat tcttcatgca tctgtaattt aattttaagt ataatgtttt gcctttggta 3120

caactaaatt aaaactcttg gtggtcacat attgtatata aacaaaacaa tatgctttgt 3180

tgaaggaaaa ttttctttat tggaatgtgg ttgtaatcct tgttcagttc ttaagtttcg 3240

gttttttttta aaaacaggat gcaacttaaa cttttctttg catcaaggta tatgcaaaac 3300

attggtgccg tgcatcacca aatgaaagtt tgtatttaac gaggaggtgc tttacactgt 3360

actttttggt gttttttgga aaagttacat ttagatctat tctgaagctg ttcattttta 3420

acaaataaaa tgttacaggt ttcacatg   3448

<210> 112

<211> 318

<212> PRT

<213> Homo sapiens

<400> 112

Met Asn Arg Phe Gly Thr Arg Leu Val Gly Ala Thr Ala Thr Ser Ser
1   5   10   15

Pro Pro Pro Lys Ala Arg Ser Asn Glu Asn Leu Asp Lys Ile Asp Met
            20   25   30

Ser Leu Asp Asp Ile Ile Lys Leu Asn Arg Lys Glu Gly Lys Lys Gln
        35   40   45

Asn Phe Pro Arg Leu Asn Arg Arg Leu Leu Gln Gln Ser Gly Ala Gln
    50   55   60

Gln Phe Arg Met Arg Val Arg Trp Gly Ile Gln Gln Asn Ser Gly Phe
65   70   75   80

Gly Lys Thr Ser Leu Asn His Arg Gly Arg Val Met Pro Gly Lys Arg
                85   90   95

Arg Pro Asn Gly Val Ile Thr Gly Leu Ala Ala Arg Lys Thr Thr Gly
            100   105   110

Ile Arg Lys Gly Ile Ser Pro Met Asn Arg Pro Pro Leu Ser Asp Lys

```
            115                    120                    125
Asn Ile Glu Gln Tyr Phe Pro Val Leu Lys Arg Lys Ala Asn Leu Leu
        130                    135                    140
Arg Gln Asn Glu Gly Gln Arg Lys Pro Val Ala Val Leu Lys Arg Pro
145                    150                    155                    160
Ser Gln Leu Ser Arg Lys Asn Asn Ile Pro Ala Asn Phe Thr Arg Ser
                165                    170                    175
Gly Asn Lys Leu Asn His Gln Lys Asp Thr Arg Gln Ala Thr Phe Leu
                    180                    185                    190
Phe Arg Arg Gly Leu Lys Val Gln Ala Gln Leu Asn Thr Glu Gln Leu
                195                    200                    205
Leu Asp Asp Val Val Ala Lys Arg Thr Arg Gln Trp Arg Thr Ser Thr
    210                    215                    220
Thr Asn Gly Gly Ile Leu Thr Val Ser Ile Asp Asn Pro Gly Ala Val
225                    230                    235                    240
Gln Cys Pro Val Thr Gln Lys Pro Arg Leu Thr Arg Thr Ala Val Pro
                245                    250                    255
Ser Phe Leu Thr Lys Arg Gly Gln Ser Asp Val Lys Lys Val Pro Lys
                260                    265                    270
Gly Val Pro Leu Gln Phe Asp Ile Asn Ser Val Gly Lys Gln Thr Gly
                275                    280                    285
Met Thr Leu Asn Glu Arg Phe Gly Ile Leu Lys Glu Gln Arg Ala Thr
    290                    295                    300
Leu Thr Tyr Asn Lys Gly Gly Ser Arg Phe Val Thr Val Gly
305                    310                    315
```

<210> 113

<211> 3388

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (395)..(2773)

<400> 113

accggtaccg gccgcgcgct ggtagtcgcc ggtgtggctg cacctcacca atcccgtgcg 60

ccgcggctgg gccgtcggag agtgcgtgtg cttctctcct gcacgcggtg cttgggctcg 120

gccaggcggg gtccgccgcc agggtttgag gatgggggag tagctacagg aagcgacccc 180

gcgatggcaa ggtatatttt tgtggaatga aaaggaagta ttagaaatga gctgaagacc 240

attcacagat taatattttt ggggacagat ttgtgatgct tgattcaccc ttgaagtaat 300

gtagacagaa gttctcaaat ttgcatatta catcaactgg aaccagcagt gaatcttaat 360

gttcacttaa atcagaactt gcataagaaa gagaatggga gtctggtcaa ataaagatga 420

ctatatcaga gacttgaaaa ggatcattct ctgttttctg atagtgtata tggccatttt 480

agtgggcaca gatcaggatt tttacagttt acttggagtg tccaaaactg caagcagtag 540

agaaataaga caagctttca agaaattggc attgaagtta catcctgata aaaacccgaa 600

taacccaaat gcacatggcg attttttaaa aataaataga gcatatgaag tactcaaaga 660

tgaagatcta cggaaaaagt atgacaaata tggagaaaag ggacttgagg ataatcaagg 720

tggccagtat gaaagctgga actattatcg ttatgatttt ggtatttatg atgatgatcc 780

tgaaatcata acattggaaa gaagagaatt tgatgctgct gttaattctg gagaactgtg 840

gtttgtaaat ttttactccc caggctgttc acactgccat gatttagctc ccacatggag 900

agactttgct aaagaagtgg atgggttact tcgaattgga gctgttaact gtggtgatga 960

tagaatgctt tgccgaatga aaggagtcaa cagctatccc agcctcttca tttttcggtc 1020

tggaatggcc ccagtgaaat atcatggaga cagatcaaag gagagtttag tgagttttgc 1080

aatgcagcat gttagaagta cagtgacaga actttggaca ggaaattttg tcaactccat 1140

acaaactgct tttgctgctg gtattggctg gctgatcact ttttgttcaa aaggaggaga 1200

ttgtttgact tcacagacac gactcaggct tagtggcatg ttggatggtc ttgttaatgt 1260

aggatggatg gactgtgcca cccaggataa cctttgtaaa agcttagata ttacaacaag 1320

tactactgct tattttcctc ctggagccac tttaaataac aaagagaaaa acagtatttt 1380

gtttctcaac tcattggatg ctaaagaaat atatttggaa gtaatacata atcttccaga 1440

ttttgaacta ctttcggcaa acacactaga ggatcgtttg gctcatcatc ggtggctgtt 1500

attttttcat tttggaaaaa atgaaaattc aaatgatcct gagctgaaaa aactaaaaac 1560

tctacttaaa aatgatcata ttcaagttgg caggtttgac tgttcctctg caccagacat 1620

ctgtagtaat ctgtatgttt ttcagccgtc tctagcagta tttaaaggac aaggaaccaa 1680

agaatatgaa attcatcatg gaaagaagat tctatatgat atacttgcct ttgccaaaga 1740

aagtgtgaat tctcatgtta ccacgcttgg acctcaaaat tttcctgcca atgacaaaga 1800

accatggctt gttgatttct ttgcccccctg gtgtccacca tgtcgagctt tactaccaga 1860

gttacgaaga gcatcaaatc ttctttatgg tcagcttaag tttggtacac tagattgtac 1920

agttcatgag ggactctgta acatgtataa cattcaggct tatccaacaa cagtggtatt 1980

caaccagtcc aacattcatg agtatgaagg acatcactct gctgaacaaa tcttggagtt 2040

catagaggat cttatgaatc cttcagtggt ctcccttaca cccaccacct tcaacgaact 2100

agttacacaa agaaaacaca acgaagtctg gatggttgat ttctattctc cgtggtgtca 2160

tccttgccaa gtcttaatgc cagaatggaa aagaatggcc cggacattaa ctggactgat 2220

caacgtgggc agtatagatt gccaacagta tcattctttt tgtgcccagg aaaacgttca 2280

aagataccct gagataagat ttttttcccccc aaaatcaaat aaagcttatc attatcacag 2340

ttacaatggt tggaataggg atgcttattc cctgagaatc tggggtctag gatttttacc 2400

tcaagtatcc acagatctaa cacctcagac tttcagtgaa aaagttctac aagggaaaaa 2460

tcattgggtg attgatttct atgctccttg gtgtggacct tgccagaatt ttgctccaga 2520

atttgagctc ttggctagga tgattaaagg aaaagtgaaa gctggaaaag tagactgtca 2580

ggcttatgct cagacatgcc agaaagctgg gatcagggcc tatccaactg ttaaatttta 2640

tttctacgaa agagcaaata gaaattttca agaagagcag ataaatacca gagatgcaaa 2700

agcaatcgct gccttaataa gtgaaaaatt ggaaactctc cgaaatcaag gcaagaggaa 2760

taaggatgaa ctttgataat gttgaagatg aagaaaaagt ttaaaagaaa ttctgacaga 2820

tgacatcaga agacacctat ttagaatgtt acatttatga tgggaatgaa tgaacattat 2880

cttagacttg cagttgtact gccagaatta tctacagcac tggtgtaaaa gaagggtctg 2940

caaactttt ctgtaaaggg ccggtttata agtatttag actttgcagg ctataatata 3000

tggttcacac atgagaacaa gaatagagtc atcatgtatt ctttgttatt tgcttttaac 3060

aacctttaaa aaatattaaa acgattctta gctcagagcc atacaaaagt aggctggatt 3120

cagtccatgg accatagatt gctgtccccc tcgacggact tataatgttt caggtggctg 3180

gcttgaacat gagtctgctg tgctatctac ataaatgtct aagttgtata aagtccactt 3240

tcccttcacg ttttttggct gacctgaaaa gaggtaactt agtttttggt cacttgttct 3300

cctaaaaatg ctatccctaa ccatgtattt atattccgtt ttaaaaacac ccatgatgtg 3360

gcacagtaaa caaaccctgt tatgctgt 3388

<210> 114

<211> 793

<212> PRT

<213> Homo sapiens

<400> 114

Met Gly Val Trp Ser Asn Lys Asp Asp Tyr Ile Arg Asp Leu Lys Arg
1   5   10   15

Ile Ile Leu Cys Phe Leu Ile Val Tyr Met Ala Ile Leu Val Gly Thr
            20   25   30

Asp Gln Asp Phe Tyr Ser Leu Leu Gly Val Ser Lys Thr Ala Ser Ser
        35   40   45

Arg Glu Ile Arg Gln Ala Phe Lys Lys Leu Ala Leu Lys Leu His Pro
     50   55   60

Asp Lys Asn Pro Asn Asn Pro Asn Ala His Gly Asp Phe Leu Lys Ile
65   70   75   80

Asn Arg Ala Tyr Glu Val Leu Lys Asp Glu Asp Leu Arg Lys Lys Tyr
         85   90   95

Asp Lys Tyr Gly Glu Lys Gly Leu Glu Asp Asn Gln Gly Gly Gln Tyr
         100   105   110

Glu Ser Trp Asn Tyr Tyr Arg Tyr Asp Phe Gly Ile Tyr Asp Asp Asp
       115   120   125

Pro Glu Ile Ile Thr Leu Glu Arg Arg Glu Phe Asp Ala Ala Val Asn
     130   135   140

Ser Gly Glu Leu Trp Phe Val Asn Phe Tyr Ser Pro Gly Cys Ser His
145   150   155   160

Cys His Asp Leu Ala Pro Thr Trp Arg Asp Phe Ala Lys Glu Val Asp
         165   170   175

Gly Leu Leu Arg Ile Gly Ala Val Asn Cys Gly Asp Asp Arg Met Leu
         180   185   190

Cys Arg Met Lys Gly Val Asn Ser Tyr Pro Ser Leu Phe Ile Phe Arg
       195   200   205

Ser Gly Met Ala Pro Val Lys Tyr His Gly Asp Arg Ser Lys Glu Ser
     210   215   220

Leu Val Ser Phe Ala Met Gln His Val Arg Ser Thr Val Thr Glu Leu
225   230   235   240

Trp Thr Gly Asn Phe Val Asn Ser Ile Gln Thr Ala Phe Ala Ala Gly
         245   250   255

Ile Gly Trp Leu Ile Thr Phe Cys Ser Lys Gly Gly Asp Cys Leu Thr
         260   265   270

Ser Gln Thr Arg Leu Arg Leu Ser Gly Met Leu Asp Gly Leu Val Asn
       275   280   285

Val Gly Trp Met Asp Cys Ala Thr Gln Asp Asn Leu Cys Lys Ser Leu
     290   295   300

Asp Ile Thr Thr Ser Thr Thr Ala Tyr Phe Pro Pro Gly Ala Thr Leu
305   310   315   320

Asn Asn Lys Glu Lys Asn Ser Ile Leu Phe Leu Asn Ser Leu Asp Ala
       325   330   335

```
Lys Glu Ile Tyr Leu Glu Val Ile His Asn Leu Pro Asp Phe Glu Leu
            340             345             350
Leu Ser Ala Asn Thr Leu Glu Asp Arg Leu Ala His His Arg Trp Leu
            355             360             365
Leu Phe Phe His Phe Gly Lys Asn Glu Asn Ser Asn Asp Pro Glu Leu
        370             375             380
Lys Lys Leu Lys Thr Leu Leu Lys Asn Asp His Ile Gln Val Gly Arg
385             390             395             400
Phe Asp Cys Ser Ser Ala Pro Asp Ile Cys Ser Asn Leu Tyr Val Phe
                405             410             415
Gln Pro Ser Leu Ala Val Phe Lys Gly Gln Gly Thr Lys Glu Tyr Glu
            420             425             430
Ile His His Gly Lys Lys Ile Leu Tyr Asp Ile Leu Ala Phe Ala Lys
        435             440             445
Glu Ser Val Asn Ser His Val Thr Thr Leu Gly Pro Gln Asn Phe Pro
    450             455             460
Ala Asn Asp Lys Glu Pro Trp Leu Val Asp Phe Phe Ala Pro Trp Cys
465             470             475             480
Pro Pro Cys Arg Ala Leu Leu Pro Glu Leu Arg Arg Ala Ser Asn Leu
            485             490             495
Leu Tyr Gly Gln Leu Lys Phe Gly Thr Leu Asp Cys Thr Val His Glu
            500             505             510
Gly Leu Cys Asn Met Tyr Asn Ile Gln Ala Tyr Pro Thr Thr Val Val
        515             520             525
Phe Asn Gln Ser Asn Ile His Glu Tyr Glu Gly His His Ser Ala Glu
    530             535             540
Gln Ile Leu Glu Phe Ile Glu Asp Leu Met Asn Pro Ser Val Val Ser
545             550             555             560
Leu Thr Pro Thr Thr Phe Asn Glu Leu Val Thr Gln Arg Lys His Asn
            565             570             575
Glu Val Trp Met Val Asp Phe Tyr Ser Pro Trp Cys His Pro Cys Gln
            580             585             590
Val Leu Met Pro Glu Trp Lys Arg Met Ala Arg Thr Leu Thr Gly Leu
        595             600             605
Ile Asn Val Gly Ser Ile Asp Cys Gln Gln Tyr His Ser Phe Cys Ala
    610             615             620
```

Gln Glu Asn Val Gln Arg Tyr Pro Glu Ile Arg Phe Phe Pro Pro Lys
625   630   635   640

Ser Asn Lys Ala Tyr His Tyr His Ser Tyr Asn Gly Trp Asn Arg Asp
                    645   650   655

Ala Tyr Ser Leu Arg Ile Trp Gly Leu Gly Phe Leu Pro Gln Val Ser
                    660   665   670

Thr Asp Leu Thr Pro Gln Thr Phe Ser Glu Lys Val Leu Gln Gly Lys
                675   680   685

Asn His Trp Val Ile Asp Phe Tyr Ala Pro Trp Cys Gly Pro Cys Gln
            690   695   700

Asn Phe Ala Pro Glu Phe Glu Leu Leu Ala Arg Met Ile Lys Gly Lys
705   710   715   720

Val Lys Ala Gly Lys Val Asp Cys Gln Ala Tyr Ala Gln Thr Cys Gln
                725   730   735

Lys Ala Gly Ile Arg Ala Tyr Pro Thr Val Lys Phe Tyr Phe Tyr Glu
                740   745   750

Arg Ala Asn Arg Asn Phe Gln Glu Glu Gln Ile Asn Thr Arg Asp Ala
            755   760   765

Lys Ala Ile Ala Ala Leu Ile Ser Glu Lys Leu Glu Thr Leu Arg Asn
            770   775   780

Gln Gly Lys Arg Asn Lys Asp Glu Leu
785   790

<210> 115
<211> 1286
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (32)..(1171)

<400> 115
gcttcctcgt tgcccccgcc gcgggcgcga gatggattcc gggtgctggt tgttcggcgg 60
cgagttcgag gactcggtgt tcgaggagag gccggagcgg cggtcaggac cgcccgcgtc 120

```
ctactgcgcc aagctctgcg agccgcagtg gttttatgaa gaaacagaaa gcagtgatga 180
tgttgaagtg ctgactctca agaaattcaa aggagacctg gcctacagac gacaagagta 240
tcagaaagca ctgcaggagt attccagtat ctctgaaaaa ttgtcatcaa ccaattttgc 300
catgaaaagg gatgtccagg aaggtcaggc tcggtgtctg gctcacctgg gtaggcatat 360
ggaggcgctg gagattgctg caaacttgga aaataaagca accaacacag accatttaac 420
cacggtactc tacctccagc ttgctatttg ttcaagtttg cagaacttgg agaaaacaat 480
tttctgcctg cagaaactga tttctttgca tcctttaat ccttggaact ggggcaaatt 540
ggcagaggct tacctgaatc tggggccagc tctttcagca gcacttgcgt catctcagaa 600
acagcacagt ttcacctcaa gtgacaaaac tatcaaatcc ttctttccac actcaggaaa 660
agactgtctt ttgtgttttc ctgaaacctt gcctgagagc tctttatttt ctgtggaagc 720
gaatagcagt aatagccaga aaaatgagaa agctctgaca aatatccaaa actgtatggc 780
agaaaagaga gaaacagtgt tgatagagac tcagctgaaa gcatgtgcct cttttatacg 840
aaccaggctt ctgcttcagt ttacccaacc tcagcaaaca tcgtttgctt tggagaggaa 900
cttaaggact cagcaggaaa ttgaagataa aatgaaaggg ttcagcttca agaagacac 960
tttgctgttg atagctgagg ttatgggaga agatatccca gaaaaaataa aagatgaagt 1020
tcacccagag gtgaagtgtg ttggctccgt agccctgact gccttggtga ctgtatcctc 1080
agaagaattt gaagacaagt ggttcagaaa gatcaaagac catttctgtc catttgaaaa 1140
tcagttccat acagagatac aaatcttggc ttagtgggtt ataaaaaaca aaaccacaaa 1200
tatcttgtac tgtattaatt gtccttgttt acttcagaca ggatccattg ctaatcatgg 1260
agtataaatg attatttatg ttttat                                   1286
```

<210> 116

<211> 380

<212> PRT

<213> Homo sapiens

<400> 116

```
Met Asp Ser Gly Cys Trp Leu Phe Gly Gly Glu Phe Glu Asp Ser Val
1               5                   10                  15
Phe Glu Glu Arg Pro Glu Arg Arg Ser Gly Pro Pro Ala Ser Tyr Cys
                20                  25                  30
Ala Lys Leu Cys Glu Pro Gln Trp Phe Tyr Glu Glu Thr Glu Ser Ser
            35                  40                  45
Asp Asp Val Glu Val Leu Thr Leu Lys Lys Phe Lys Gly Asp Leu Ala
        50                  55                  60
```

Tyr Arg Arg Gln Glu Tyr Gln Lys Ala Leu Gln Glu Tyr Ser Ser Ile
65   70   75   80

Ser Glu Lys Leu Ser Ser Thr Asn Phe Ala Met Lys Arg Asp Val Gln
              85   90   95

Glu Gly Gln Ala Arg Cys Leu Ala His Leu Gly Arg His Met Glu Ala
              100   105   110

Leu Glu Ile Ala Ala Asn Leu Glu Asn Lys Ala Thr Asn Thr Asp His
              115   120   125

Leu Thr Thr Val Leu Tyr Leu Gln Leu Ala Ile Cys Ser Ser Leu Gln
              130   135   140

Asn Leu Glu Lys Thr Ile Phe Cys Leu Gln Lys Leu Ile Ser Leu His
145   150   155   160

Pro Phe Asn Pro Trp Asn Trp Gly Lys Leu Ala Glu Ala Tyr Leu Asn
              165   170   175

Leu Gly Pro Ala Leu Ser Ala Ala Leu Ala Ser Ser Gln Lys Gln His
              180   185   190

Ser Phe Thr Ser Ser Asp Lys Thr Ile Lys Ser Phe Phe Pro His Ser
              195   200   205

Gly Lys Asp Cys Leu Leu Cys Phe Pro Glu Thr Leu Pro Glu Ser Ser
      210   215   220

Leu Phe Ser Val Glu Ala Asn Ser Ser Asn Ser Gln Lys Asn Glu Lys
225   230   235   240

Ala Leu Thr Asn Ile Gln Asn Cys Met Ala Glu Lys Arg Glu Thr Val
              245   250   255

Leu Ile Glu Thr Gln Leu Lys Ala Cys Ala Ser Phe Ile Arg Thr Arg
              260   265   270

Leu Leu Leu Gln Phe Thr Gln Pro Gln Gln Thr Ser Phe Ala Leu Glu
      275   280   285

Arg Asn Leu Arg Thr Gln Gln Glu Ile Glu Asp Lys Met Lys Gly Phe
      290   295   300

Ser Phe Lys Glu Asp Thr Leu Leu Leu Ile Ala Glu Val Met Gly Glu
305   310   315   320

Asp Ile Pro Glu Lys Ile Lys Asp Glu Val His Pro Glu Val Lys Cys
              325   330   335

Val Gly Ser Val Ala Leu Thr Ala Leu Val Thr Val Ser Ser Glu Glu
              340   345   350

Phe Glu Asp Lys Trp Phe Arg Lys Ile Lys Asp His Phe Cys Pro Phe
          355   360   365
Glu Asn Gln Phe His Thr Glu Ile Gln Ile Leu Ala
          370   375   380

<210> 117
<211> 1836
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (283)..(732)

<400> 117
cacttaacac actcttgatg acatatggca ggttcttggt attgacaccc gtgtggctgc 60
aggtggcatg aatcatgcat ggcttgtctg gatctgtctt ctgcagagcc cattctctct 120
gtcttttgct agtctggact ggagagcaac ttccctgagt caggactctt gctgctaatt 180
gcagaaaacc agcagtctct gtgaagttgt ggtgttctca gagttcagct gtaaaatata 240
gaatcctcat taattgtatt tacaactata ttgagcaaac caatgttgtt ctttattaat 300
gtacagacca aaaaagacac ctcaaaagaa aggacgtacg cgtttcttgt aaacacgagg 360
caccccaaga taagaagaca gatagagcaa gggatggaca tggtcatctc ctcagtgatt 420
ggagaaagtt accggcttca gtttgatttt caagaggcag tgaagaattt cttccccca 480
ggaaatgaag tggttaatgg agaaaattta agctttgcat atgaattcaa agctgatgca 540
ttatttgatt tcttctattg gtttgggctc agtaattccg ttgtaaaagt aaatggaaaa 600
gttctttag gttcaataga tgatgttttt aactgcaatc tgtcacccag atcatctctg 660
acagagcctc ttttggcaga attaccattt ccaagtgttc tggaatctga agagacaccc 720
aaccaattta tctgattgaa ctgaacattg tagcagttgc tcccgcactc caggcctgtg 780
ctagactata ggctgggggg agggtaggag gtgggaggca gatacttcca cctgcgtgtc 840
aatctccggc tcctccatgg cttctatgga ggactcctct cttctgcttc tgtggatgtg 900
atgccctggc aggcccaggg cagctgattc ccctaaaact tatgattacc aggatggaaa 960
ggccttggtc ccatggcact gggtgggggct gggggatatt ctctactttg aacacttctc 1020
ccaagaggca gaagggccac agagttctgc caccctgaac atttttctca gttccctggg 1080
agtttttgtg gcagcctttg tgggagtggt ctgactggct gttgacctag catgcttcat 1140
aaatcagggt ttggccctct gcttggagca tccaaccccct tgaactcaaa cctgtcgagc 1200

```
aagggggttaa gagttctgtt ctcttgccaa cctggctggg caaaagcctg tgccatcttt 1260
cactgggagg caaatatgtt tttcatcctg ccatatgaca cctatgagaa acgttcacag 1320
tgaggagtag ccaggttgct aggacagtaa ccctgccaca cactgcctga aatcggaact 1380
cccttggcct ccctcttaac taagtgaccc atgtagaagg aagccaggag atatggtacc 1440
gaacaatgac aggggaaggg tattggacac ggcagcgtcc tccttattga aaacacatta 1500
tgtcagttgg gaattttaaa taagctttta gcaaacctaa cactaaaagc aaaatagaag 1560
aaagctatac cattaccata atacattttt catctcatgg ctacaatgga attcttgaaa 1620
aggaaaaaaa aatcctatct acatataaaa acctgcatga atgaatcact acatatgctt 1680
ataatgagga agagttatgg gtcctgagtg taatttttta tcctttctta aaaagtttct 1740
gtattatgca ttttgataac actactgatg atccttccac ttacatttga aatgttatgt 1800
accacatttg cacaattaaa acttttctta gcattc                           1836
```

<210> 118

<211> 150

<212> PRT

<213> Homo sapiens

<400> 118

```
Met Leu Phe Phe Ile Asn Val Gln Thr Lys Lys Asp Thr Ser Lys Glu
 1               5                  10                  15
Arg Thr Tyr Ala Phe Leu Val Asn Thr Arg His Pro Lys Ile Arg Arg
                20                  25                  30
Gln Ile Glu Gln Gly Met Asp Met Val Ile Ser Ser Val Ile Gly Glu
            35                  40                  45
Ser Tyr Arg Leu Gln Phe Asp Phe Gln Glu Ala Val Lys Asn Phe Phe
        50                  55                  60
Pro Pro Gly Asn Glu Val Val Asn Gly Glu Asn Leu Ser Phe Ala Tyr
65                  70                  75                  80
Glu Phe Lys Ala Asp Ala Leu Phe Asp Phe Phe Tyr Trp Phe Gly Leu
                85                  90                  95
Ser Asn Ser Val Val Lys Val Asn Gly Lys Val Leu Leu Gly Ser Ile
                100                 105                 110
Asp Asp Val Phe Asn Cys Asn Leu Ser Pro Arg Ser Ser Leu Thr Glu
            115                 120                 125
Pro Leu Leu Ala Glu Leu Pro Phe Pro Ser Val Leu Glu Ser Glu Glu
```

```
           130                    135                    140
Thr Pro Asn Gln Phe Ile
           145                    150


<210> 119
<211> 1863
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (460)..(1233)

<400> 119
accctcggcg cgccgcgcgg gatcagcgtc ctccagccgc gctgccccgg cccaccgtgc 60
agctgtagcc gcggcgcggt ggcgcggtgg cgcagggcgc tgctgggccg cccattgttg 120
agcgcgttgg gccccgccgg cgatgccgcg cgccgcctcc tcggagcggc ggcgaagttt 180
gaacttggcg tcggcctgga gccccgagca gcccgggggc ggcggccgcg aggcgagcgg 240
cgatgagatg tgtgcacaga cccaggccat gcagatactg gtgcctctaa cttcgtcagc 300
ccttagaaca tgacttgctg tccccagtgg agaagaaacc agaagctaca gccaagtatg 360
tcccctccaa agtccatttc tgttcagtgc ctgaaaatga ggaggatgcc tccctgaaga 420
gacatctcac acctccccaa ggcaacagcc cacattccaa tgagagaaag agcaccccca 480
cctcctccac cgagtcagga aaccccggtg tatagcatgg atgacttccc tccacctcct 540
ccccacactg tatgtgaggc gcagctggac agtgaggatc ccgaggggcc acgccccagc 600
ttcaacaaac tttctaaagt gacaattgca agggaaaggc acatgcctgg tgcagcccat 660
gtggtaggta gtcagacact ggcttccaga ctccaaactt ctatcaaggg ttcagaggct 720
gagtccacac caccctcctt catgagcgtt cacgcccaac ttgctgggtc tcttggtggg 780
cagccagcac ccatccagac tcaaagcctc agccatgatc cagtcagtgg aactcagggt 840
ttagaaaaga aagtcagtcc tgatcctcag aagagttcag aagacatcag aacagaggct 900
ttggccaagg aaattgtcca ccaagacaaa tctctagcag acattttgga tccagactcc 960
aggctgaaga caacaatgga cctgatggaa ggtttatttc cccgagatgt gaacttgctg 1020
aaggaaaaca gtgtaaagag gaaggccata cagagaactg tcagctcttc aggatgtgaa 1080
ggcaagagga atgaagacaa ggaagcagtg agcatgttgg ttaactgccc tcagatttca 1140
ttcccaaggc tggggccctg gctctgcccc caaacctcac gagtgagccc attcctgctg 1200
ggggctgtac tttcagtggt attttcccaa cattaacctc tccactttaa cctcttctaa 1260
```

```
aatacccaac caaaagatca ctgtttctct caacactatt taatctgaaa aatgtttcag 1320
tacaaaccac tgtttgaact atctgggtta ttggtgtttg ttcctgatga aaggaaaaaa 1380
aattctctcc aggaggaagc cttttttcctt cttgcccttc ctgattgatc ttctgagagc 1440
tcgaatgctg ctggacacgt accccttttct attattactt tgtagtagaa agaaagttaa 1500
tgaaactgag aactgattgg agggtgtttg atcatttagt ttttaacagg ctgaggcaac 1560
atggatcagt gtgtgtcccc ctcaggaatg tatccacagt ggccttcctt gctggtgggc 1620
agtgtatcct gatggcaggg tacaagtacc attaatgaag ggtctgcaac ataaagcctt 1680
aaaaagacac acactaagaa aactgtaaaa ccttgaacat tgttatttat attttttaaa 1740
atggaaaaga tcactatgtt tgttgtgcta accacttatt tgattctgtt ttgtggtgga 1800
catagatgat tacgtttgag ctttgtattt tgtgaaaacc ttaatgaaat gaattccaaa 1860
gat                                                                 1863
```

<210> 120

<211> 258

<212> PRT

<213> Homo sapiens

<400> 120

```
Met Arg Glu Arg Ala Pro Pro Pro Pro Pro Ser Gln Glu Thr Pro
 1               5              10              15
Val Tyr Ser Met Asp Asp Phe Pro Pro Pro Pro His Thr Val Cys
            20              25              30
Glu Ala Gln Leu Asp Ser Glu Asp Pro Glu Gly Pro Arg Pro Ser Phe
            35              40              45
Asn Lys Leu Ser Lys Val Thr Ile Ala Arg Glu Arg His Met Pro Gly
        50              55              60
Ala Ala His Val Val Gly Ser Gln Thr Leu Ala Ser Arg Leu Gln Thr
65              70              75              80
Ser Ile Lys Gly Ser Glu Ala Glu Ser Thr Pro Pro Ser Phe Met Ser
                85              90              95
Val His Ala Gln Leu Ala Gly Ser Leu Gly Gly Gln Pro Ala Pro Ile
                100             105             110
Gln Thr Gln Ser Leu Ser His Asp Pro Val Ser Gly Thr Gln Gly Leu
            115             120             125
Glu Lys Lys Val Ser Pro Asp Pro Gln Lys Ser Ser Glu Asp Ile Arg
```

```
              130                     135                     140
Thr Glu Ala Leu Ala Lys Glu Ile Val His Gln Asp Lys Ser Leu Ala
145                     150                     155                     160
Asp Ile Leu Asp Pro Asp Ser Arg Leu Lys Thr Thr Met Asp Leu Met
                    165                     170                     175
Glu Gly Leu Phe Pro Arg Asp Val Asn Leu Leu Lys Glu Asn Ser Val
                    180                     185                     190
Lys Arg Lys Ala Ile Gln Arg Thr Val Ser Ser Ser Gly Cys Glu Gly
                195                     200                     205
Lys Arg Asn Glu Asp Lys Glu Ala Val Ser Met Leu Val Asn Cys Pro
            210                     215                     220
Gln Ile Ser Phe Pro Arg Leu Gly Pro Trp Leu Cys Pro Gln Thr Ser
225                     230                     235                     240
Arg Val Ser Pro Phe Leu Leu Gly Ala Val Leu Ser Val Val Phe Ser
                    245                     250                     255
Gln His
```

<210> 121

<211> 2203

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (91)..(564)

<400> 121

```
gtcgtctttc tgtctcggct gaggcagcca tctttctctt gccgcgtgct ggtgttggag 60
gaccctccct gcttcagatt taccaacagc atgaatcaag aaaagttagc caaacttcag 120
gctcaggtcc ggatagggg caagggtaca gctcgcagaa agaagaaggt ggtacataga 180
acagccacag ctgatgacaa aaagcttcag agttctctaa aaaaactggc tgtgaataat 240
atagctggta ttgaagaggt gaacatgatt aaagatgatg ggacagttat tcatttcaac 300
aatcccaaag tccaagcttc cctttctgct aataccctttg caattactgg tcatgcagaa 360
gccaaaccaa tcacagaaat gcttcctgga atattaagtc agcttggtgc tgacagttta 420
```

```
acaagcctta ggaagttagc tgaacagttc ccacggcaag tcttggacag taaagcacca 480

aaaccagagg acattgatga ggaagatgat gatgttccag atcttgtaga aaattttgat 540

gaggcatcaa agaatgaagc taactaaaag tttggttttt ggaagctggc atggactaga 600

tttaacaaat cagctatgtg gttccaaagt tttacagaca tggagaacat cacctgttac 660

tagttcagta atataaatat tttgtatatt aataatgctg tttgttcagc atttttcggt 720

catttgattt tgcattttgc acttcctccc aggatatttt tttggtcaaa atatgaagta 780

ttggtgcagt ttgagggtgt tttggttttt gattcctggt tttttgttt tttgtttggg 840

gtatttttgg tgtatgtatg tttatgtatg tgtgtgggta tgtgtgtata cagtggagag 900

caaattggaa aacagttcta tttatcctcc tccctcccca gtagaaataa aaaaaatctt 960

tacatttgtt acttttcttt tccccccgta agacacagaa ttaatggaaa gtgagtatct 1020

tggatttcaa atctgaagag attttttacca ttagtggttt gattttaatt tgcttggtta 1080

actatcatat ttttcataca cttctctgga tttaaaatat cttgaggtat tttgccactg 1140

gcttcatgct ggagtaatgg gtaacatatc tttggtatgg ttgccttaga ttaacttacc 1200

tagtcagacc cagaagaact tcttttacta gcttgcttcc taaatgcctt ttttcctctc 1260

cttttggtct ccaaatggcc tggtcagctt ttggtaatat tcttcctcat cttccaccta 1320

gcttgagaag gatgttctcc atatagagtt tagcgagtgc ctaatccctc cttttgtaag 1380

attttgttcc ctcagcttga ggaacaactt catcttcaac tttttatttc tccctgatgt 1440

tacagtttgg tagatttcaa actggaatag ctagcatgtg cttgctaaat aattttatgc 1500

cagccttatc ctgtatccta gctgttctta acagcaggta caaaaatgcc tgttttttcag 1560

caaggttgaa attgggaatg tccttttgaa tcagaagaaa ataggccata gactcatctc 1620

ccagcacaaa tgggcattct atgaaatggt actggcccta ggaggatttc ctcaaccact 1680

ctcctactct tggccttgaa cctacctctg ggttggatct tactattgta gctgctcact 1740

ataccctcct gcatgcttag aataatgctt tgaggggagc actggtaaaa cacagtattt 1800

attttttac ctcctttaag aggacttgga ggtaagttgc attcattcac tcaagtttcc 1860

ctcttgctgt ctaatagaag cttacttttt gctatatcag catttgttac agccaatatt 1920

taaggacaaa atttagaaaa tatatcattt cctggcccat catcaaacta atacagctta 1980

accttgcagc taccaatttt tgtgtcaagc tagatatctt tatttgatat ctaaggtgca 2040

agaccaacaa tatattaaga gatctgtaga catgaaggca aagctcttgt attttttttc 2100

atccaaacac ctcaatttat tttataaatt cgttcatttt tcctgttatg ttttatataa 2160

tatatggact aaacaaaata aaataacagt gcaaaagaga aac                   2203
```

<210> 122

<211> 158

<212> PRT

<213> Homo sapiens

<400> 122

```
Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala Gln Val Arg Ile Gly
 1               5                  10                  15
Gly Lys Gly Thr Ala Arg Arg Lys Lys Lys Val Val His Arg Thr Ala
                20                  25                  30
Thr Ala Asp Asp Lys Lys Leu Gln Ser Ser Leu Lys Lys Leu Ala Val
                35                  40                  45
Asn Asn Ile Ala Gly Ile Glu Glu Val Asn Met Ile Lys Asp Asp Gly
            50                  55                  60
Thr Val Ile His Phe Asn Asn Pro Lys Val Gln Ala Ser Leu Ser Ala
 65                  70                  75                  80
Asn Thr Phe Ala Ile Thr Gly His Ala Glu Ala Lys Pro Ile Thr Glu
                    85                  90                  95
Met Leu Pro Gly Ile Leu Ser Gln Leu Gly Ala Asp Ser Leu Thr Ser
                100                 105                 110
Leu Arg Lys Leu Ala Glu Gln Phe Pro Arg Gln Val Leu Asp Ser Lys
                115                 120                 125
Ala Pro Lys Pro Glu Asp Ile Asp Glu Glu Asp Asp Asp Val Pro Asp
            130                 135                 140
Leu Val Glu Asn Phe Asp Glu Ala Ser Lys Asn Glu Ala Asn
145                 150                 155
```

<210> 123
<211> 1696
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (62)..(898)

<400> 123

```
actgcggtgt ggactcgagg gctgggcgcg gggccggcgc agaagccgcc agctggagac 60
gatggtggac cacttggcca acacggagat caacagccag cgcatcgcgg cagtggagag 120
```

```
ctgcttcggg gcctcggggc agccgctggc gctgccaggc cgagtgctgc tgggcgaggg 180
cgtgctgacc aaagagtgcc gcaagaaggc caagccgcgc atcctcttcc tctttaacga 240
catcctggtg tatggcagca tcgtgctcaa caagcgcaag taccgcagcc agcacatcat 300
cccctggag gaggtcacac tggagctgtt gccggagacg ctgcaggcca agaaccgctg 360
gatgatcaag acggccaaga agtcctttgt ggtgtcggcc gcctccgcta cggagcgcca 420
ggaatggatt agccacatcg aggagtgcgt gcggcggcaa ctgagggcca cgggccgccc 480
gcccagcacg gagcacgcgg caccctggat ccccgacaag gccacggaca tctgcatgcg 540
ctgcacgcag acgcgcttct ctgccctcac gaggcgccac cactgccgca agtgcggctt 600
cgtggtctgc gctgagtgct cgcgccagcg cttcctgctc ccgcgcctgt cccccaagcc 660
cgtgcgcgtc tgcagcctct gctaccgcga actggccgcc cagcagcggc aggaggaggc 720
ggaggagcag ggcgcggggt ccccagggca gccagcccac ctggcccggc ccatctgcgg 780
agcgtccagt ggagatgacg atgactccga cgaggacaag gagggcagca gggacggcga 840
ctggcccagc agcgtggagt tctacgcctc gggggtggcc tggtctgcct tccacagctg 900
accccccggcc tgcagaacat ctgtccccaa gccagctcca ctgcccaggc ccctaagagg 960
gcagctccag aagctgccca gggctccggg accccatccc atggtggcag gtgcagcggt 1020
ggggagtggc tctttctgga ctcccagtgc cttttttgctg gacactgtgt ccttatggct 1080
tcactgcagg taatgccttt cccttcagga agccccagaa cacccacagg tcttggtaac 1140
aaacgccacc ttacactctg caggctgcag cggcagctcc agatggcctc ctgagctgga 1200
cgaccccagg tctccagaca tctagggacc agagcaggtt tgggaacaca gagggaagac 1260
aggatgggag tgtagccaca gaacccacct gcaccctgac aggcacaccc cactgaagag 1320
cctgagtccc aggaggcctc ctggaagccc aggactgccc acccaccacg ctggtgccca 1380
ccgcctggcc agccaagccc tgccgatcag acatgtgggc tccccgaagc ccagccagag 1440
actgccgtgc tgtgggtgcc accaggccca gggactgcag cctgagctcc ccgaggccca 1500
gggcagccgg gtgaggactc tgtcctgtgt cacctctctc caggtgtcca gctgtctcat 1560
gcctttttgt cctgtcctca gctctccgtg tggtcagcga aaccattgtt ttctgttagg 1620
actcagttgc aagaacagaa accctgcccc cacttaataa taaaaaagaa agtttattga 1680
tgggtggttg caaaac                                                1696
```

<210> 124

<211> 279

<212> PRT

<213> Homo sapiens

<400> 124

Met Val Asp His Leu Ala Asn Thr Glu Ile Asn Ser Gln Arg Ile Ala

```
        1                    5                      10                      15
      Ala Val Glu Ser Cys Phe Gly Ala Ser Gly Gln Pro L u Ala Leu Pro
                      20                     25                      30
      Gly Arg Val Leu Leu Gly Glu Gly Val Leu Thr Lys Glu Cys Arg Lys
                      35                     40                      45
      Lys Ala Lys Pro Arg Ile Leu Phe Leu Phe Asn Asp Ile Leu Val Tyr
               50                     55                      60
      Gly Ser Ile Val Leu Asn Lys Arg Lys Tyr Arg Ser Gln His Ile Ile
       65                     70                     75                      80
      Pro Leu Glu Glu Val Thr Leu Glu Leu Leu Pro Glu Thr Leu Gln Ala
                          85                     90                      95
      Lys Asn Arg Trp Met Ile Lys Thr Ala Lys Lys Ser Phe Val Val Ser
                      100                    105                -   110
      Ala Ala Ser Ala Thr Glu Arg Gln Glu Trp Ile Ser His Ile Glu Glu
               115                    120                    125
      Cys Val Arg Arg Gln Leu Arg Ala Thr Gly Arg Pro Pro Ser Thr Glu
               130                    135                    140
      His Ala Ala Pro Trp Ile Pro Asp Lys Ala Thr Asp Ile Cys Met Arg
      145                    150                    155                    160
      Cys Thr Gln Thr Arg Phe Ser Ala Leu Thr Arg Arg His His Cys Arg
                      165                    170                    175
      Lys Cys Gly Phe Val Val Cys Ala Glu Cys Ser Arg Gln Arg Phe Leu
                      180                    185                    190
      Leu Pro Arg Leu Ser Pro Lys Pro Val Arg Val Cys Ser Leu Cys Tyr
           .      195                    200                    205
      Arg Glu Leu Ala Ala Gln Gln Arg Gln Glu Glu Ala Glu Glu Gln Gly
               210                    215                    220
      Ala Gly Ser Pro Gly Gln Pro Ala His Leu Ala Arg Pro Ile Cys Gly
      225                    230                    235                    240
      Ala Ser Ser Gly Asp Asp Asp Ser Asp Glu Asp Lys Glu Gly Ser
                    ·  245                    250                    255
      Arg Asp Gly Asp Trp Pro Ser Ser Val Glu Phe Tyr Ala Ser Gly Val
                      260                    265                    270
      Ala Trp Ser Ala Phe His Ser
               275      ,
```

<210> 125
<211> 3078
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1668)..(2561)

<400> 125

```
atgataaaga tgcagtacct ttctcttaaa aaaaaatgct atggaaagct gtgagaattg 60
aagagacaaa ttggctgtgt cagtgtgggg ttatgtcatg atttctagaa gccctgaagt 120
tgctcttttg agcagctttg catgacacgc tctggtaaaa ggtgtgcatc tttaaattat 180
ttcatggata ctttgaaaaa tattgtatca cttcaaatac agcaataagt ttatatgttc 240
tcaagatttc atttgttttt aagaattta agttcgtgga ttaatatcac tacttgaata 300
ctgacagttg ttgattagac accgaaaggt tactgattgt tgaatgtatc tgtgttagag 360
ctgtgcactg gcacgcttgc atcaggggct ggggccacac ggccgccaca cagattcccc 420
cgtgatgcct ggagctgctt ccagagccgg gtgtctccaa gaggcacctg taggacttcc 480
catttagaaa tctcttgagt gggtttgtat gttaccttct ccaaggttta tttaggacag 540
agatattgct ggaaggtcat gggtcagatt ccctcacaac ccacctcgtc tgcgggtgca 600
gccccactcc aaggctcccc gttattgggg tatgtgagga gcagtaaata taaaaccagt 660
tcaactgtcc tcatggaatc acccctttctg tttttgcagt attcataaag ctagtgtaag 720
gtctggtttt agtctattaa atcttagaga tctaaaggaa atgctcaaaa tgtagccagg 780
ttttaaatgc tttaactttt aaaaaatgta aattttgta tgtttatagc ttctaaatat 840
gaaagttaaa gaatgtactg tgatgaaatg ttcagtatta tgttgcttct cagtatcatg 900
ttgcttctca gtattgtgtt gcttctgatt ctatgaatgt tcattttaag accccttgtt 960
gaaatgggac agttggcagc ggctctgatg agcccgagaa gaggcctgcc cttgggtgcg 1020
gagtctccct ccgcacgatg ctcccacgcg tccaacttgc acccaagggg cttttccctc 1080
ttccaagtgg actccttcaa ggaagctgca gctcggtcag cagagaaggg gcctgccgcc 1140
agcgccctgg aggaagagga agaggaaccc aagaggatgg cttgtctccc agcagccaca 1200
ccggctttgt gctcagccag ttcatttgag tttgcatgtt tctctgcact atggattttg 1260
agcatttaga tttctttaat caaaagcgtt ttagtgactc cagtagacat tttctttctg 1320
aggcatcgtg ctttgcatga gagcaggcca aggttgaggg gaaaagtaaa gttaaagtcg 1380
gttctctttc atagcaacac gtattgtctg acattcagcc agctttttttt ttttctaata 1440
atttctgtgc ctttctgtcc cgtatttact gtatttagaa aaagcagcta gaatatttct 1500
```

```
ccattaactc ttgagattca caggactgtc tagctctgag tcctagcaat agactcctta 1560

gaggagtagt acgtttatct agattttctc tagataatgc aggcggaaga cctgggttcc 1620

cgggtggggc attgcagttc ttcctgtgtt tggcttccag gaattacatg aacgacagcc 1680

ttcgcaccga cgtcttcgtg cggttccagc cagagagcat cgcctgtgcc tgcatttatc 1740

ttgctgcccg gacgctggag atccctttgc ccaatcgtcc ccattggttt cttttgtttg 1800

gagcaactga agaagaaatt caggaaatct gcttaaagat cttgcagctt tatgctcgga 1860

aaaaggttga tctcacacac ctggagggtg aagtggaaaa aagaaagcac gctatcgaag 1920

aggcaaaggc ccaagcccgg ggcctgttgc ctggggcac acaggtgctg gatggtacct 1980

cggggttctc tcctgccccc aagctggtgg aatcccccaa agaaggtaaa gggagcaagc 2040

cttccccact gtctgtgaag aacaccaaga ggaggctgga gggcgccaag aaagccaagg 2100

cggacagccc cgtgaacggc ttgccaaagg ggcgagagag tcggagtcgg agccggagcc 2160

gtgagcagag ctactcgagg tccccatccc gatcagcgtc tcctaagagg aggaaaagtg 2220

acagcggctc cacatctggt gggtccaagt cgcagagccg ctcccggagc aggagtgact 2280

ccccaccgag acaggccccc cgcagcgctc cctacaaagg ctctgagatt cggggctccc 2340

ggaagtccaa ggactgcaag tacccccaga agccacacaa gtctcggagc cggagttctt 2400

cccgttctcg aagcaggtca cgggagcggg cggataatcc gggaaaatac aagaagaaaa 2460

gtcattacta cagagatcag cgacgagagc gctcgaggtc gtatgaacgc acaggccgtc 2520

gctatgagcg ggaccaccct gggcacagca ggcatcggag gtgaggcggg gttgcagtga 2580

ctggtggccg caagcccttc cctggggagt acctgatggc tgccctttga ccccggtgg 2640

ctgcccttg acccccgggt gtgctctcag cgcaagtggt cctagaacag gattcttttt 2700

ggaaatgtct gtcgactgga ccttggtgga tttggaaatg gaactgaggg accggtgaca 2760

cgtgcttcag accggtctgg ggtgcggcgc acacctgggc ccgtgcaggg ctcagctcgg 2820

cagcagctct gagggcagct caatgaaaaa gtgaatgcac acgcccttgt tggcgtggcc 2880

tggcatggcc tggtgctatc ggcagccgct ctccactccc cgactgataa ttacgtgaag 2940

ccaagaaaga tgatttttag aacctttgcc tatattaggt tgtacttatg tacatatttt 3000

gcagtgtttc acaggagaaa gtggccttaa ctgcccctta ttctctctcc acgttgtaaa 3060

taaacatgtg tttaatac                                             3078
```

<210> 126

<211> 298

<212> PRT

<213> Homo sapiens

<400> 126

Met Asn Asp Ser Leu Arg Thr Asp Val Phe Val Arg Phe Gln Pro Glu

```
  1                 5                   10                  15
Ser Ile Ala Cys Ala Cys Ile Tyr Leu Ala Ala Arg Thr Leu Glu Ile
              20                  25                  30
Pro Leu Pro Asn Arg Pro His Trp Phe Leu Leu Phe Gly Ala Thr Glu
          35                  40                  45
Glu Glu Ile Gln Glu Ile Cys Leu Lys Ile Leu Gln Leu Tyr Ala Arg
      50                  55                  60
Lys Lys Val Asp Leu Thr His Leu Glu Gly Glu Val Glu Lys Arg Lys
65                  70                  75                  80
His Ala Ile Glu Glu Ala Lys Ala Gln Ala Arg Gly Leu Leu Pro Gly
              85                  90                  95
Gly Thr Gln Val Leu Asp Gly Thr Ser Gly Phe Ser Pro Ala Pro Lys
              100                 105                 110
Leu Val Glu Ser Pro Lys Glu Gly Lys Gly Ser Lys Pro Ser Pro Leu
          115                 120                 125
Ser Val Lys Asn Thr Lys Arg Arg Leu Glu Gly Ala Lys Lys Ala Lys
          130                 135                 140
Ala Asp Ser Pro Val Asn Gly Leu Pro Lys Gly Arg Glu Ser Arg Ser
145                 150                 155                 160
Arg Ser Arg Ser Arg Glu Gln Ser Tyr Ser Arg Ser Pro Ser Arg Ser
              165                 170                 175
Ala Ser Pro Lys Arg Arg Lys Ser Asp Ser Gly Ser Thr Ser Gly Gly
              180                 185                 190
Ser Lys Ser Gln Ser Arg Ser Arg Ser Arg Ser Asp Ser Pro Pro Arg
          195                 200                 205
Gln Ala Pro Arg Ser Ala Pro Tyr Lys Gly Ser Glu Ile Arg Gly Ser
      210                 215                 220
Arg Lys Ser Lys Asp Cys Lys Tyr Pro Gln Lys Pro His Lys Ser Arg
225                 230                 235                 240
Ser Arg Ser Ser Ser Arg Ser Arg Ser Arg Ser Arg Glu Arg Ala Asp
              245                 250                 255
Asn Pro Gly Lys Tyr Lys Lys Lys Ser His Tyr Tyr Arg Asp Gln Arg
              260                 265                 270
Arg Glu Arg Ser Arg Ser Tyr Glu Arg Thr Gly Arg Arg Tyr Glu Arg
          275                 280                 285
Asp His Pro Gly His Ser Arg His Arg Arg
```

290   295

<210> 127
<211> 1844
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (401)..(1456)

<400> 127

agagtcgggt agacggcagc gggagcggtg gcgtctcccc gccttccctc cctcccgggc 60
ctgggcgccc agccggacag gtgagcggca gccaggtgag cgcgcccacc tgcgcctctc 120
cgcgcggccc gccctccccg gcgccgggct cctctccgcg ccccctgtcgg cgcggaaccc 180
tggcctcgtc cgcggcccag ctccctggag cctcgcatca gcggggggcgc ccccgcgagc 240
tgcgctctcc ccggccggag cgctcctcct ccagcccca gcccgcaggg tactttgccc 300
tcggagcgaa ggaggctcca gaactggtag agccgggcca tcgggctggg cacctccccg 360
cggcgcccgc agcgcggagt ccactgaccg gctcaaaggt atggcgttga cggtggatgt 420
ggccgggcca gcgccctggg gcttccgtat cacagggggc agggatttcc acacgcccat 480
catggtgact aaggtggccg agcggggcaa agccaaggac gctgacctcc ggcctggaga 540
cataatcgtg gccatcaacg gggaaagcgc ggagggcatg ctgcatgccg aggcccagag 600
caagatccgc cagagcccct cgcccctgcg gctgcagctg gaccggtctc aggctacgtc 660
tccaggcag accaatgggg acagctcctt ggaagtgctg gcgactcgct tccagggctc 720
cgtgaggaca tacactgaga gtcagtcctc cttaaggtcc tcctactcca gcccaacctc 780
cctcagcccg agggccggca gccccttctc accaccaccc tctagcagct ccctcactgg 840
agaggcggcc atcagccgca gcttccagag tctggcatgt tccccgggcc tccccgctgc 900
tgaccgcctg tcctactcag gccgccctgg aagccgacag gccggcctcg gccgcgctgg 960
cgactcggcg gtgctggtgc tgccgccttc cccgggccct cgttcctcca ggcccagcat 1020
ggactcggaa gggggaagcc tcctcctgga cgaggactcg gaagtcttca agatgctgca 1080
ggaaaatcgc gagggacggg cggccccccg acagtccagc tcctttcggc tcttgcagga 1140
agccctggag gctgaggaga gaggtggcac gccagccttc ttgcccagct cactgagccc 1200
ccagtcctcc ctgcccgcct ccagggccct ggccacccct cccaagctcc acacttgtga 1260
gaagtgcagt accagcatcg cgaaccaggc tgtgcgcatc caggagggcc ggtaccgcca 1320
ccccggctgc tacacctgtg ccgactgtgg gctgaacctg aagatgcgcg ggcacttctg 1380

```
ggtgggtgac gagctgtact gtgagaagca tgcccgccag cgctactccg cacctgccac 1440
cctcagctct cgggcctgag cccgccatgc cctcagcctg cctcactgct gggccagggt 1500
catgcctata taagttggca tggcagggac aatggtgggc agttgctctt acatgagcta 1560
agtttggaga cctgaggccc ctttgtcctc gctgggtggg ccaaggtctg ggacctgtct 1620
tggactgtgg gagactcacc ctcaccttgc caggcctctc ccctgcagga ctggcattgc 1680
actagtctga ggtggccact gcctttgatc aacctttgtg tgcgagggtc taagtagggt 1740
cgaacacaga agtgggaagg agaggggtgg gccaggggct aatggtgtca ctgtgtaaag 1800
tttttgacat actagctcta taaatatatg aatatggaca aaat          1844
```

<210> 128

<211> 352

<212> PRT

<213> Homo sapiens

<400> 128

```
Met Ala Leu Thr Val Asp Val Ala Gly Pro Ala Pro Trp Gly Phe Arg
1               5                   10                  15

Ile Thr Gly Gly Arg Asp Phe His Thr Pro Ile Met Val Thr Lys Val
                20                  25                  30

Ala Glu Arg Gly Lys Ala Lys Asp Ala Asp Leu Arg Pro Gly Asp Ile
            35                  40                  45

Ile Val Ala Ile Asn Gly Glu Ser Ala Glu Gly Met Leu His Ala Glu
        50                  55                  60

Ala Gln Ser Lys Ile Arg Gln Ser Pro Ser Pro Leu Arg Leu Gln Leu
65                  70                  75                  80

Asp Arg Ser Gln Ala Thr Ser Pro Gly Gln Thr Asn Gly Asp Ser Ser
                85                  90                  95

Leu Glu Val Leu Ala Thr Arg Phe Gln Gly Ser Val Arg Thr Tyr Thr
                100                 105                 110

Glu Ser Gln Ser Ser Leu Arg Ser Ser Tyr Ser Ser Pro Thr Ser Leu
            115                 120                 125

Ser Pro Arg Ala Gly Ser Pro Phe Ser Pro Pro Pro Ser Ser Ser Ser
        130                 135                 140

Leu Thr Gly Glu Ala Ala Ile Ser Arg Ser Phe Gln Ser Leu Ala Cys
145                 150                 155                 160
```

Ser Pro Gly Leu Pro Ala Ala Asp Arg Leu Ser Tyr Ser Gly Arg Pro
                165   170   175

Gly Ser Arg Gln Ala Gly Leu Gly Arg Ala Gly Asp Ser Ala Val Leu
                180   185   190

Val Leu Pro Pro Ser Pro Gly Pro Arg Ser Ser Arg Pro Ser Met Asp
            195   200   205

Ser Glu Gly Gly Ser Leu Leu Leu Asp Glu Asp Ser Glu Val Phe Lys
        210   215   220

Met Leu Gln Glu Asn Arg Glu Gly Arg Ala Ala Pro Arg Gln Ser Ser
225   230   235   240

Ser Phe Arg Leu Leu Gln Glu Ala Leu Glu Ala Glu Glu Arg Gly Gly
            245   250   255

Thr Pro Ala Phe Leu Pro Ser Ser Leu Ser Pro Gln Ser Ser Leu Pro
            260   265   270

Ala Ser Arg Ala Leu Ala Thr Pro Pro Lys Leu His Thr Cys Glu Lys
            275   280   285

Cys Ser Thr Ser Ile Ala Asn Gln Ala Val Arg Ile Gln Glu Gly Arg
        290   295   300

Tyr Arg His Pro Gly Cys Tyr Thr Cys Ala Asp Cys Gly Leu Asn Leu
305   310   315   320

Lys Met Arg Gly His Phe Trp Val Gly Asp Glu Leu Tyr Cys Glu Lys
                325   330   335

His Ala Arg Gln Arg Tyr Ser Ala Pro Ala Thr Leu Ser Ser Arg Ala
            340   345   350

<210> 129
<211> 2356
<212> DNA
<213> Homo sapiens

<400> 129
atttacaatt gattaaaagt atccatgtct tggatacata cgtatctata gagctggcat 60
gtaattcttc ctctataaag aataggtata ggaaagactg aataaaaatg gagggatatc 120
cccttggatt tcacttgcat tgtgcaataa gcaaagaagg gttgataaaa gttcttgatc 180
aaaaagttca aagaaaccag aattttagac agcaagctaa ataaatattg taaaattgca 240

```
ctatattagg ttaagtatta tttaggtatt ataatatgct ttgtaaattt tatattccaa 300
atattgctca atatttttca tctattaaat taatttctag tgtaaataag tagcttctat 360
atctgtctta gtctattata attgtaagga gtaaaattaa atgaatagtc tgcaggtata 420
aatttgaaca atgcatagat gatcgaaaat tacggaaaat catagggcag agaggtgtga 480
agattcatca ttatgtgaaa tttggatctt tctcaaatcc ttgctgaaat ttaggatggt 540
tctcactgtt tttctgtgct gatagtaccc tttccaaggt gaccttcagg gggattaacc 600
ttcctagctc aagcaatgag ctaaaaggag ccttatgcat gatcttccca catatcaaaa 660
taactaaaag gcactgagtt tggcattttt ctgcctgctc tgctaagacc tttttttttt 720
tttactttca ttataacata ttatacatga cattatacaa aaatgattaa aatatattaa 780
aacaacatca acaatccagg atatttttct ataaaacttt ttaaaaataa ttgtatctat 840
atattcaatt ttacatcctt cttcaaaggc tttgtttttc taaaggcttt gttttccttt 900
ttattatttt tttctttttt atttttttga gacagtcttg ctctgtcgct caggctggag 960
tgcagtggca cgatctcagc tcactgcaac ctcctcctcc caggttcaag tgattcttgt 1020
tcatcagcct cccgagtagc tgggactaca ggcatgtgcc actatgccca gctaattttt 1080
gtactttttag tagagacagg gtttcaccac attggtcagg ctggtcttga aatgctggcg 1140
tcaagtgatc tgcctgcctc cgcctcacaa agcactggga ttacaggcat gaatctggcc 1200
ttacgtaata tattttctta atggctgcat aatatcacat caaataggca tttttcaaac 1260
ctctttcctt attaaacatg tagactatat ccattttta ctaaaataaa taacatttca 1320
gataatatct ttgcactgat aatgttgcca agccatttct aaagtgacct tatcaattta 1380
attaccattg gatgagggtg ttgctttcat cgcaccattg taaattgtct tttttatttc 1440
aatttgcgtt tatttataac tggttgcaaa ggtacacaga acacacgctc cttcaactta 1500
tctttgataa acccaagcaa ggatacaaaa agttggacga cattgagtag agtcatggta 1560
tacggtgctg accctacagt atcagtggaa aagataagga aaatgtcact actcacctat 1620
gttatgcaaa acagttaggt gtgctggggc tggatactgc tcttttactt gagcattggt 1680
tgattaaagt ttaggtacca tccaggctgg tctagagaag tctttggagt taaccatgct 1740
cttttttgtta aagaagagag taatgtgttt atcctggctc atagtccgtc accgaaaata 1800
gaaaatgcca tccataggta aaatgctgac ctatagaaaa aaatgaactc tacttttata 1860
gcctagtaaa aatgctctac ctgagtagtt aaaagcaatt catgaagcct gaagctaaag 1920
agcactctgg tggtttggc ataatagctg catttccaga cctgaccttt ggccccaacc 1980
acaagtgctc caagccccac cagctgacca aagaaagccc aagttctcct tctgtccttc 2040
ccacaacctc cctgctccca aaactatgaa attaatttga ccatattaac acagctgact 2100
cctccagttt acttaaggta gaaagaatga gtttacaaca gatgaaaata agtgctttgg 2160
gcgaactgta ttccttttaa cagatccaaa ctattttaca tttaaaaaaa aagttaaact 2220
aaacttcttt actgctgata tgtttcctgt attctagaaa aatttttaca ctttcacatt 2280
attttttgtac actttcccca tgttaaggga tgatggcttt tataaatgtg tattcattaa 2340
atgttacttt aaaaat                                                  2356
```

<210> 130
<211> 1731
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (72)..(1373)

<400> 130

```
ttagggcggg agcccggcga gggcgccggt gctttgttct gtctgaggcc aggaagtttg 60
accgcgctgc catgccgaac cgtaaggcca gccggaatgc ttactatttc ttcgtgcagg 120
agaagatccc cgaactacgg cgacgaggcc tgcctgtggc tcgcgttgct gatgccatcc 180
cttactgctc ctcagactgg gcgcttctga gggaggaaga aaaggagaaa tacgcagaaa 240
tggctcgaga atggagggcc gctcagggaa aggaccctgg gccctcagag aagcagaaac 300
ctgttttcac accactgagg aggccaggca tgcttgtacc aaagcagaat gtttcacctc 360
cagatatgtc agctttgtct ttaaaaggtg atcaagctct ccttggaggc attttttatt 420
ttttgaacat ttttagccat ggcgagctac ctcctcattg tgaacagcgc ttcctccctt 480
gtgaaattgg ctgtgttaag tattctctcc aagaaggtat tatggcagat ttccacagtt 540
ttataaatcc tggtgaaatt ccacgaggat ttcgatttca ttgtcaggct gcaagtgatt 600
ctagtcacaa gattcctatt tcaaattttg aacgtgggca taaccaagca actgtgttac 660
aaaacctta tagatttatt catcccaacc cagggaactg gccacctatc tactgcaagt 720
ctgatgatag aaccagagtc aactggtgtt tgaagcatat ggcaaaggca tcagaaatca 780
ggcaagatct acaacttctc actgtagagg accttgtagt ggggatctac caacaaaaat 840
ttctcaagga gccctctaag acttggattc gaagcctcct agatgtggcc atgtgggatt 900
attctagcaa cacaaggtgc aagtggcatg aagaaaatga tattctcttc tgtgctttag 960
ctgtttgcaa gaagattgcg tactgcatca gtaattctct ggccactctc tttggaatcc 1020
agctcacaga ggctcatgta ccactacaag attatgaggc cagcaatagt gtgacaccca 1080
aaatggttgt attggatgca gggcgttacc agaagctaag ggttgggagt tcaggattct 1140
ctcatttcaa ctcttctaat gaggaacaaa gatcaaacac acccattggt gactacccat 1200
ctagggcaaa aatttctggc caaaacagca gcgttcgggg aagaggaatt acccgcttac 1260
tagagagcat ttccaattct tccagcaata tccacaaatt ctccaactgt gacacttcac 1320
tctcacctta catgtcccaa aaagatggat acaaatcttt ctcttcctta tcttaatgat 1380
ggtactcttt tcaatttctg aaaacagtaa caggcccaac ttccttctta ctacagtcat 1440
```

```
attaaacaga tcacatcaat gacaaatgtc actactataa aaactactta atttgtaagg 1500
aaattgtttc atagatttaa aaaaattgtg gttggagagc atcttggcat ttgtgctttt 1560
tttcttgagg gattgttctg cttcctggct gtatgatggg tatatcatta aagtttggag 1620
tcctatatga acaaaactga catttttaga gttgtacttt tgggaatgtt atagattgat 1680
cattctttct cctgataata aaggtattga atatctgtta tgaaaggttc t          1731
```

<210> 131
<211> 434
<212> PRT
<213> Homo sapiens

<400> 131

```
Met Pro Asn Arg Lys Ala Ser Arg Asn Ala Tyr Tyr Phe Phe Val Gln
 1               5                  10                  15
Glu Lys Ile Pro Glu Leu Arg Arg Arg Gly Leu Pro Val Ala Arg Val
                20                  25                  30
Ala Asp Ala Ile Pro Tyr Cys Ser Ser Asp Trp Ala Leu Leu Arg Glu
            35                  40                  45
Glu Glu Lys Glu Lys Tyr Ala Glu Met Ala Arg Glu Trp Arg Ala Ala
        50                  55                  60
Gln Gly Lys Asp Pro Gly Pro Ser Glu Lys Gln Lys Pro Val Phe Thr
65                  70                  75                  80
Pro Leu Arg Arg Pro Gly Met Leu Val Pro Lys Gln Asn Val Ser Pro
                85                  90                  95
Pro Asp Met Ser Ala Leu Ser Leu Lys Gly Asp Gln Ala Leu Leu Gly
            100                 105                 110
Gly Ile Phe Tyr Phe Leu Asn Ile Phe Ser His Gly Glu Leu Pro Pro
            115                 120                 125
His Cys Glu Gln Arg Phe Leu Pro Cys Glu Ile Gly Cys Val Lys Tyr
    130                 135                 140
Ser Leu Gln Glu Gly Ile Met Ala Asp Phe His Ser Phe Ile Asn Pro
145                 150                 155                 160
Gly Glu Ile Pro Arg Gly Phe Arg Phe His Cys Gln Ala Ala Ser Asp
                165                 170                 175
Ser Ser His Lys Ile Pro Ile Ser Asn Phe Glu Arg Gly His Asn Gln
```

```
                 180                   185                   190
Ala Thr Val Leu Gln Asn Leu Tyr Arg Phe Ile His Pro Asn Pro Gly
            195                   200                   205
Asn Trp Pro Pro Ile Tyr Cys Lys Ser Asp Asp Arg Thr Arg Val Asn
        210                   215                   220
Trp Cys Leu Lys His Met Ala Lys Ala Ser Glu Ile Arg Gln Asp Leu
225                   230                   235                   240
Gln Leu Leu Thr Val Glu Asp Leu Val Val Gly Ile Tyr Gln Gln Lys
                245                   250                   255
Phe Leu Lys Glu Pro Ser Lys Thr Trp Ile Arg Ser Leu Leu Asp Val
            260                   265                   270
Ala Met Trp Asp Tyr Ser Ser Asn Thr Arg Cys Lys Trp His Glu Glu
        275                   280                   285
Asn Asp Ile Leu Phe Cys Ala Leu Ala Val Cys Lys Lys Ile Ala Tyr
        290                   295                   300
Cys Ile Ser Asn Ser Leu Ala Thr Leu Phe Gly Ile Gln Leu Thr Glu
305                   310                   315                   320
Ala His Val Pro Leu Gln Asp Tyr Glu Ala Ser Asn Ser Val Thr Pro
                325                   330                   335
Lys Met Val Val Leu Asp Ala Gly Arg Tyr Gln Lys Leu Arg Val Gly
                340                   345                   350
Ser Ser Gly Phe Ser His Phe Asn Ser Ser Asn Glu Glu Gln Arg Ser
            355                   360                   365
Asn Thr Pro Ile Gly Asp Tyr Pro Ser Arg Ala Lys Ile Ser Gly Gln
        370                   375                   380
Asn Ser Ser Val Arg Gly Arg Gly Ile Thr Arg Leu Leu Glu Ser Ile
385                   390                   395                   400
Ser Asn Ser Ser Ser Asn Ile His Lys Phe Ser Asn Cys Asp Thr Ser
                405                   410                   415
Leu Ser Pro Tyr Met Ser Gln Lys Asp Gly Tyr Lys Ser Phe Ser Ser
            420                   425                   430
Leu Ser
```

<210> 132

<211> 1561
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (385)..(1281)

<400> 132
```
gaagaaaggc gagcagaaca gaggaagtat ggagtgttct ttgatgacga ctatgactac 60
ctgcagcacc tgaaggaacc atctgggcct tcagagctta ttccctcaag taccttcagt 120
gcacacaaca ggagagagga gaaagaagaa acgctagtaa ttccaagcac tggaattaag 180
ttgccttcat cagtgtttgc ttcagagttt gaggaagatg ttggattgtt aaataaagca 240
gctccagttt caggacctcg actggatttt gatcctgaca ttgttgcagc tcttgatgat 300
gattttgact ttgatgatcc agataatctg cttgaggatg actttattct tcaggccaat 360
aaggcaacag gagaggaaga gggaatggat atacagaaat ctgagaatga agatgacagc 420
gagtgggaag atgtggatga tgagaaggga gatagcaatg atgactatga ctctgcaggc 480
ctattgtcag atgaagactg tatgtctgtg cccggaaaaa ctcacagagc tatagcagat 540
cacttgttct ggagtgagga aacaaagagt cgcttcacgg agtattcgat gacttcctca 600
gtcatgagga gaaatgaaca gctgacccta catgatgaga ggtttgagaa gtttttatgag 660
caatatgatg atgatgaaat tggagctctg gataatgcag aattggaagg ttctattcaa 720
gtggacagca atcgcttaca ggaagttttg aatgactact ataaagagaa ggcagagaat 780
tgtgtaaaat tgaataccct tgaacccttg gaggatcaag acctgccaat gaatgagctt 840
gatgagtctg aggaggaaga aatgattact gtagtccttg aagaagccaa agagaagtgg 900
gattgtgaat ctatttgtag tacatactca aatttatata accatccaca gcttatcaag 960
tatcaaccaa agcccaaaca aattcgaata tcttctaaaa caggaatacc tctcaatgtc 1020
ttaccaaaga aaggactcac agcaaagcaa actgaaagaa tacagatgat taatggcagt 1080
gatcttccta aagtatcaac tcagccacgt tctaaaaatg aaagcaaaga agataaaaga 1140
gcaagaaagc aagctataaa agaagagcgc aaggaacgaa gagtggagaa gaaagctaac 1200
aaattagcat ttaaactgga gaaaagaagg caagaaaaag agctgctgaa cttgaagaag 1260
aatgttgagg gtctaaagct atagacagtg gagcatacag ggcaaggcac tttattaggg 1320
gctcctcatc tttggttatt gactagaaac ttcagaaaga caaaactgtt tgccattttt 1380
actggcagat aagaggaaaa tacaatattt gtattatttt tatactagta agtgtcccct 1440
gccaaccatc ttgtaaatat tgtaatactt taatttttaa tattataagc ttacatttgc 1500
tctgaagtaa atgacttcat gaatgtgaaa tgtttgataa attaaaggaa aatatcttca 1560
t                                                                 1561
```

<210> 133

<211> 299

<212> PRT

<213> Homo sapiens

<400> 133

```
Met Asp Ile Gln Lys Ser Glu Asn Glu Asp Asp Ser Glu Trp Glu Asp
 1               5                  10                  15

Val Asp Asp Glu Lys Gly Asp Ser Asn Asp Asp Tyr Asp Ser Ala Gly
                20                  25                  30

Leu Leu Ser Asp Glu Asp Cys Met Ser Val Pro Gly Lys Thr His Arg
          35                  40                  45

Ala Ile Ala Asp His Leu Phe Trp Ser Glu Glu Thr Lys Ser Arg Phe
     50                  55                  60

Thr Glu Tyr Ser Met Thr Ser Ser Val Met Arg Arg Asn Glu Gln Leu
65                  70                  75                  80

Thr Leu His Asp Glu Arg Phe Glu Lys Phe Tyr Glu Gln Tyr Asp Asp
               85                  90                  95

Asp Glu Ile Gly Ala Leu Asp Asn Ala Glu Leu Glu Gly Ser Ile Gln
               100                 105                 110

Val Asp Ser Asn Arg Leu Gln Glu Val Leu Asn Asp Tyr Tyr Lys Glu
          115                 120                 125

Lys Ala Glu Asn Cys Val Lys Leu Asn Thr Leu Glu Pro Leu Glu Asp
     130                 135                 140

Gln Asp Leu Pro Met Asn Glu Leu Asp Glu Ser Glu Glu Glu Glu Met
145                 150                 155                 160

Ile Thr Val Val Leu Glu Glu Ala Lys Glu Lys Trp Asp Cys Glu Ser
               165                 170                 175

Ile Cys Ser Thr Tyr Ser Asn Leu Tyr Asn His Pro Gln Leu Ile Lys
               180                 185                 190

Tyr Gln Pro Lys Pro Lys Gln Ile Arg Ile Ser Ser Lys Thr Gly Ile
          195                 200                 205

Pro Leu Asn Val Leu Pro Lys Lys Gly Leu Thr Ala Lys Gln Thr Glu
     210                 215                 220
```

Arg Ile Gln Met Ile Asn Gly Ser Asp Leu Pro Lys Val Ser Thr Gln
225   230   235   240

Pro Arg Ser Lys Asn Glu Ser Lys Glu Asp Lys Arg Ala Arg Lys Gln
                245   250   255

Ala Ile Lys Glu Glu Arg Lys Glu Arg Arg Val Glu Lys Lys Ala Asn
                260   265   270

Lys Leu Ala Phe Lys Leu Glu Lys Arg Arg Gln Glu Lys Glu Leu Leu
            275   280   285

Asn Leu Lys Lys Asn Val Glu Gly Leu Lys Leu
        290   295

<210> 134

<211> 2497

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (305)..(970)

<400> 134

```
tcccaatgct ggtcggtact gggagacagt agagaggttg aagatcaatc agttctatgg 60

cgccccaacg gctgtccggc tgttgctgaa atacggtgat gcctgggtga agaagtatga 120

tcgctcctcc ctgcggaccc tggggtcagt gggagagccc atcaactgtg aggcctggga 180

gtggcttcac agggtggtgg gggacagcag gtgcacgctg gtggacacct ggtggcagac 240

agaaacaggt ggcatctgca tcgcaccacg gccctcggaa gaaggggcgg aaatcctccc 300

tgccatggcg atgaggccct tctttggcat cgtccccgtc ctcatggatg agaagggcag 360

cgtcgtggag ggcagcaacg tctccggggc cctgtgcatc tcccaggcct ggccgggcat 420

ggccaggacc atctatggcg accaccagcg atttgtggac gcctacttca aggcctaccc 480

aggctattac ttcactggag acggggctta ccgaactgag ggcggctatt accagatcac 540

agggcggatg gatgatgtca tcaacatcag tggccaccgg ctggggaccg cagagattga 600

ggacgccatc gccgaccacc ctgcagtacc agaaagtgct gtcattggct acccccacga 660

catcaaagga gaagctgcct ttgccttcat tgtggtgaaa gatagtgcgg gtgactcaga 720

tgtggtggtg caggagctca agtccatggt ggccaccaag atcgccaaat atgctgtgcc 780

tgatgagatc ctggtggtga aacgtcttcc aaaaaccagg tctgggaagg tcatgcggcg 840
```

gctcctgagg aagatcatca ctagtgaggc ccaggagctg ggagacacta ccaccttgga 900

ggaccccagc atcatcgcag agatcctgag tgtctaccag aagtgcaagg acaagcaggc 960

tgctgctaag tgagctggca ccttgtgggg ctcttgggat gggcgggcac ccaagccctg 1020

gcttgtcctt cccagaaggt acccctgagg ttggcgtctt cctacgtccc agaagcagcc 1080

cccaccccac acatgaccca caccgccctc acgtgaagct gggctgagag ccctttctcc 1140

catccattgg aggtcccagg agtgtcaccc atggagaggc tatgcgacat ggctagggct 1200

ggttctgcca tctgagtttg gtttcctgga atgaaaaggc attgccatct ccattcctct 1260

gccctcttga gccagcacag gaaggtgagg ccctgggata gcgcgcctgc tcagataaca 1320

cagagctagt tagctagtag caaccgtgtt ttctccagat ctgtctagat acaaaggtca 1380

gaaatcttat ttttatactt ttatattgtg gaagaacagc atgcaacact cacatgtagt 1440

gtgtggattt acttgaacat gttcttttta acatgtagtt atgaaaatct ccttttttgc 1500

ctctactggt gaggaaacat gaggatcaga ggccacattt ttaattattg ttagtgtatt 1560

tggaagtctg aattggagat gtttgtacct ctgtctaaac agttcccttg agaacttcca 1620

agcctccggc atcttttcct ggtgagtgtt tctcctgtgc ttggttgtgt ataatggagc 1680

taactcctaa gcggtggggt gaatgtggcc gccttagttc tgaagctact ccagttatgt 1740

tctgtttctt caagctgtga tccagaaaga tttttgtgcc cccagatgcc tcttgatagg 1800

agaggcaaca tactccaaat agttgggttc ttcagggaag ctattagaaa ctcaggtgac 1860

ttgttagagc actaacttgg tcagagccaa atcctggcaa acgctgcctg accttcactc 1920

tgtggttggg gcagtgagaa ccactgaggt ccaatgatga gacttggagg tctggatcca 1980

gtctctcttt gttttaatgt gacttaggtg ctgtcaacat tagcaagata atggaaatca 2040

cgacgccagt gggtgcttac ctccctgcta ggcatgcagg ggctggcggt tggcagggga 2100

aggaggccca gtgagccggg tcccttaggg gagggagagt ttgtcctctt tgccccacag 2160

tctacccttc agggccttgt ggcagtgcca gtgttcgggg ggtgtctggg ccactgagta 2220

cccactcggt cgtggttgtg ctggcctctt gggtgagtga acctgtgaag cccaggaggt 2280

ggtgttggct gcagggtaca caaatactga gtggtggtct tttgttacag gcttagcaac 2340

aaagctgtgc cctgggcatg gggggctgta gtgtagctac agttgtgcgt ttgtgaaatg 2400

gcttagcttt ccatgttgct gagaggaacc tggacatggt cccgggcatc tgaatgatct 2460

gtaggggagg gagttcaaat aaagctttat tttgttc   2497

<210> 135

<211> 222

<212> PRT

<213> Homo sapiens

<400> 135

```
Met Ala Met Arg Pro Phe Phe Gly Ile Val Pro Val Leu Met Asp Glu
 1               5                  10                  15
Lys Gly Ser Val Val Glu Gly Ser Asn Val Ser Gly Ala Leu Cys Ile
                20                  25                  30
Ser Gln Ala Trp Pro Gly Met Ala Arg Thr Ile Tyr Gly Asp His Gln
                35                  40                  45
Arg Phe Val Asp Ala Tyr Phe Lys Ala Tyr Pro Gly Tyr Tyr Phe Thr
            50                  55                  60
Gly Asp Gly Ala Tyr Arg Thr Glu Gly Gly Tyr Tyr Gln Ile Thr Gly
 65                 70                  75                  80
Arg Met Asp Asp Val Ile Asn Ile Ser Gly His Arg Leu Gly Thr Ala
                85                  90                  95
Glu Ile Glu Asp Ala Ile Ala Asp His Pro Ala Val Pro Glu Ser Ala
                100                 105                 110
Val Ile Gly Tyr Pro His Asp Ile Lys Gly Glu Ala Ala Phe Ala Phe
            115                 120                 125
Ile Val Val Lys Asp Ser Ala Gly Asp Ser Asp Val Val Val Gln Glu
            130                 135                 140
Leu Lys Ser Met Val Ala Thr Lys Ile Ala Lys Tyr Ala Val Pro Asp
145                 150                 155                 160
Glu Ile Leu Val Val Lys Arg Leu Pro Lys Thr Arg Ser Gly Lys Val
                165                 170                 175
Met Arg Arg Leu Leu Arg Lys Ile Ile Thr Ser Glu Ala Gln Glu Leu
                180                 185                 190
Gly Asp Thr Thr Thr Leu Glu Asp Pro Ser Ile Ile Ala Glu Ile Leu
            195                 200                 205
Ser Val Tyr Gln Lys Cys Lys Asp Lys Gln Ala Ala Ala Lys
    210                 215                 220
```

<210> 136
<211> 1972
<212> DNA
<213> Homo sapiens

<220>

<221> CDS
<222> (666)..(1487)

<400> 136

```
tccaggcgca ggccgaggcc ttcgcgcgcc agatctacgg gcccgagtgc accttcaagg 60
ccagccacgg ctggttctgg cgctggcaga agcgccacgg catctccagc cagcgcttct 120
acggcgaggc cgggcccccca gccccgagcc ccgcgcccgg cccgcccgtc aaggaggagc 180
ccgcgctgcc ctccggcgcc ggccccctgc ccgaccgcgc cccggccccg ccgccccccgg 240
ccgagggcgg ctacggggac gagcagattt acagcgccag cgtcaccggc ctctactgga 300
agctgcttcc ggagcaggct gcgcccccgg gcgcagggga ccccgggggcg gggggctgtg 360
gccggcgctg gcggggcgac cgcgtaacgg tgctgctggc cgcaaacctg accggcagcc 420
acaagctgaa gccgctggtc atcgggcggc tgccggaccc gcccagcctg cgccaccaca 480
accaggacaa gttcccggcc tcctaccgct acagccccga cgcctggctc agccgcccgc 540
tgctgcgggg ctggttcttt gaggaatttg tcccaggcgt caaacgctac ctgcgccgaa 600
gctgcctgca gcagaaggcc gtgctgctgg tggcccaccc gccctgccca agcccagctg 660
ccagtatgcc cgccctggac agcgaggatg ccccccgtgcg gtgcaggccg gagcccctcg 720
gtccccccgga ggagctgcag acaccggatg gcgctgtgcg ggtgctgttc ctgtccaaag 780
gcagcagccg ggcacatatc cccgcaccgc tggagcaggg cgtggtggcc gccttcaaac 840
agctgtacaa gcgcgagctg ctgcgactgg ctgtgtcctg cgccagcggc tccccgctgg 900
gcttcatgcg cagcttcatg ctcaaggaca tgctctacct ggctggcctc tcctgggacc 960
tggtgcaggc gggcagcatt gagcgctgct ggctgctggg cctgcgggct gccttcgagc 1020
cccggcccgg cgaggacagt gctgggcagc cggcccaggc cgaggaagcc gccgagcaca 1080
gcagggtgct cagcgacctc acccacctgg cggctctggc ctacaagtgc ctggctccgg 1140
aggaggttgc ggagtggctg cacctggacg atgatggggg tccgcccgag ggctgcaggg 1200
aggaggtggg cccagcccctg cccccctgcag cgcctccggc cccagccagt ctgccctctg 1260
ccattggggg cggagaggac gaggaggagg ccaccgacta tggagggacc tcagtgccga 1320
ctgccgggga ggccgtgcgg gggctagaaa cagctctgcg gtggctggag aaccaggacc 1380
ccagagaggt ggggccactg aggctggtgc agttgcgctc actcatcagc atggcccgga 1440
ggctgggggg catcgggcat accccagcag gcccctatga cggtgtgtga ccaggccagc 1500
ccagtgacct ttctcctgct gcacttggag ggaggggaca tacacacagt ctcccatctc 1560
tcctcccctc cccctggggt ggcccaccgc atgggtacag ggggttccag gaatccaaat 1620
ccagcatggc ttggaggagc tctgttggtg agaggtcgcc ctgcctcact ggcaccctgg 1680
gggcacagct ggaagagagg cctggcccat gctcctctca gggcaggcac atgtacgggg 1740
catacaaggc acagcgcctg ttggaacagg tggctgtgtt cctgctctgg cccccgtgcg 1800
gctgggcctc cgcccctgca ccagtcacat gcactggacg agggccgaaa ctcctgtctg 1860
ctatcgagcc ctggtgctat gtggcccccgg agccacagca caatcatctc agtggcgaag 1920
```

cacaccactt gattctattt tttttttaaca cattaaatct gtttttaaag at   1972

<210> 137
<211> 274
<212> PRT
<213> Homo sapiens

<400> 137
Met Pro Ala Leu Asp Ser Glu Asp Ala Pro Val Arg Cys Arg Pro Glu
 1   5   10   15
Pro Leu Gly Pro Pro Glu Glu Leu Gln Thr Pro Asp Gly Ala Val Arg
                20   25   30
Val Leu Phe Leu Ser Lys Gly Ser Ser Arg Ala His Ile Pro Ala Pro
            35   40   45
Leu Glu Gln Gly Val Val Ala Ala Phe Lys Gln Leu Tyr Lys Arg Glu
        50   55   60
Leu Leu Arg Leu Ala Val Ser Cys Ala Ser Gly Ser Pro Leu Gly Phe
65   70   75   80
Met Arg Ser Phe Met Leu Lys Asp Met Leu Tyr Leu Ala Gly Leu Ser
                85   90   95
Trp Asp Leu Val Gln Ala Gly Ser Ile Glu Arg Cys Trp Leu Leu Gly
                100   105   110
Leu Arg Ala Ala Phe Glu Pro Arg Pro Gly Glu Asp Ser Ala Gly Gln
            115   120   125
Pro Ala Gln Ala Glu Glu Ala Ala Glu His Ser Arg Val Leu Ser Asp
        130   135   140
Leu Thr His Leu Ala Ala Leu Ala Tyr Lys Cys Leu Ala Pro Glu Glu
145   150   155   160
Val Ala Glu Trp Leu His Leu Asp Asp Asp Gly Gly Pro Pro Glu Gly
                165   170   175
Cys Arg Glu Glu Val Gly Pro Ala Leu Pro Pro Ala Ala Pro Pro Ala
                180   185   190
Pro Ala Ser Leu Pro Ser Ala Ile Gly Gly Gly Glu Asp Glu Glu Glu
            195   200   205
Ala Thr Asp Tyr Gly Gly Thr Ser Val Pro Thr Ala Gly Glu Ala Val

```
        210                 215                 220
Arg Gly Leu Glu Thr Ala Leu Arg Trp Leu Glu Asn Gln Asp Pro Arg
225                 230                 235                 240
Glu Val Gly Pro Leu Arg Leu Val Gln Leu Arg Ser Leu Ile Ser Met
                245                 250                 255
Ala Arg Arg Leu Gly Gly Ile Gly His Thr Pro Ala Gly Pro Tyr Asp
                260                 265                 270
Gly Val
```

<210> 138
<211> 3677
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (996)..(3437)

<400> 138

```
attacaggcg gatcccatgg ggccggaggc ctgcaccacc gcgagatgtg gccattttac 60
aagaaagggc taataagttg gtgaaatacc tgttggttaa ggaccagaca aagatcccca 120
tcaaacgctc agacatgctg agggatgtca tccgagaata tgatgaatat ttcccagaaa 180
tcattgaacg agcaagctac actctggaga agatgtttcg agtcaatctg aaagaaattg 240
ataagctaag tagcttgtat attctcatca gcactcagga atcctctgca ggcatactgg 300
gaacgaccaa ggacacaccc aagctgggtc tcctcatggt gattctgagt gtcattttta 360
tgaatggcaa caaggccggt gaggctgtca tctgggaggt gctgcgcaag ttggggctgc 420
gccctgggta tgactgggct ctctcagcgc ttgctgtccg tgttgtcctt tggcaagaga 480
ggatggtcct aggattgcat cagtctggtg gtctggtgga gcgggtgggg tgctggactg 540
ggtagagggc ccagggttct gacctgggtg gatgacgggc aaatggtcct gaactctctg 600
ctgtctctct ccttaatgtc ctctgtctgt tctaagctga gatgttagat agaccttcag 660
ggatccctga caaagaggca tctggtctta actgcttgct tctagtggcc atgtgctcat 720
tactttcttc acttcattga gactgcccca tgtgctagag aggtttcttc catgttggga 780
aatgcctctg ccctcatctg ggcagttctg atctgtgttc atgggttatt tttcccattg 840
tcagggtgag gcattcactc tttggggaag tgaggaagct catcacagac gagtttgtga 900
```

```
agcagaagta cctggagtac aagagggtcc ctaacagcag accacctgaa tatgagttcc 960
tctggggctt gcgctcctac cacgagacta gcaagatgaa agtcctcaag tttgcatgca 1020
gggtgcagaa gaaagacccc aaggactggg ctgtgcagta ccgcgaggca gtggagatgg 1080
aagtccaagc tgcagctgtg gctgtggctg aggctgaagc cagggctgag gcaagagccc 1140
aaatggggat tggagaggaa gctgtggctg ggccctggaa ttgggatgac atggatatcg 1200
actgcctaac aagggaagag ttaggcgatg atgctcagcc ctggagcaga tttcagcagag 1260
aaattgaggc cagagcccaa gaaaatgcag atgccagcac caacgtcaac ttcagcagag 1320
gagctagtac cagggctggc ttcagcgatg gtgctagtat tagcttcaat ggtgcaccca 1380
gctccagtgg tgccttcagt ggtggacctg gcattacctt tggtgttgca cccagccacca 1440
gtgccagctt cagcaataca gccagcatta gctttggtgg tacactgagc actagctcca 1500
gcttcagcag cgcagccagc attagctttg gttgtgcaca cagcaccagc actagtttca 1560
gcagtgaagc cagcattagc tttggtggca tgccttgtac cagtgccagc tttagtggtg 1620
gagtcagctc tagttttagt ggcccactca gcaccagtgc cactttcagt ggtggagcca 1680
gctctggctt tggaggcaca ctcagcacca cggctggctt tagtagtgcg cttagcacca 1740
gcaccagctt tggcagtgca cccacaacga gcacagtctt cagtagtgcg cttagcacca 1800
gcactggctt tggaggcata ctcagtacca gtatctgctt cggtggctct ccctgcacca 1860
gtggtagctt tggtggtaca ctcagcacca gtgtctgttt tggtggctct ccctgcacca 1920
gcactggctt tggaggcaca cttagcacca gtgctcagtt tggcagtgtg ctcaacacca 1980
gtgccaattt tggtggtaca ctaagtacca gtgccagctt tggcggtaca ctaagcacca 2040
gtgctggctt tggtggtgct atgagcacca gtgtcagctt tggcagtgca ctcaacacca 2100
gtactggttt tggtggtgct cctggcacca acactgactt tggtggtgca ctcaacacca 2160
gtgtctgctt tggtggctct cccagcacca gtgctggctt tggtggtgca tttagcacca 2220
atgctggtta tggtagtgct gtcagcacca acactgactt tggtggtgca ctcaacacca 2280
gcgtctgttt tggtggctct cccagcacca gtgccagctt tggcggtgca tttagcacca 2340
atgccagctt cagtggtgca ccaatcacca accctgctt cggtggtact cccagcaaca 2400
gtgcttgctt cggtggggca cttagtaccg ttgctgactt tggtggtgct catggcacca 2460
gtgctggctt tggtggtgct cccagcacca gtgtcggctt tggcagtgca tctaatacta 2520
gcattggctt tggtggagct cccagcacca gcctctgctt tggcagtgca ttaagcacca 2580
gcctctgttt tggtgccct cctagcacca gtgcctgctt tggtggtggc ctaggcacca 2640
acctatgctt tggtgaccagc accagtaccg gtttcagctt tggtggtggc ctaggtacca 2700
gttttgtga tggacccagc ctgaacacca gtgctggctt tgatggtggg ctgggcacca 2760
atgctggatt tggtggtgga ctaagcacaa gttctggctt tggtggtgga ctggtcacta 2820
gtgctggctt cagtggtggc ctaagcacca gcactggttt tggtggtgga ctggcacca 2880
gcgctggctt cggtggagga ccaggcacca gtgctggctt tgatggtggg ctgggcacca 2940
gtgctggctt cagtggcgga ctgggcacca atgctagttt cggcagcaca cttggcacca 3000
gtgatggctt tggtggtgga ctgggcacca 3060
```

```
gtgctggctt tagtggtggc ctcagcacca gcgatggctt tggcagtagg cctaatgcca 3120
gcttcgacag aggactgagt accatcattg gctttggcag tggttccaac accagcactg 3180
gctttactgg cgaacccagc accagcacgg gcttcagtag tggacccagt tctattgttg 3240
gcttcagcgg tggaccaagc actggtgttg gcttctgcag tggaccaagc accagtggct 3300
tcagcggtgg accgagcaca ggagctggct cggcggtgg accaaacact ggtgctggct 3360
ttggtggtgg accgagcacc agtgctggct ttggcagtgg agccgccagt cttggtgcct 3420
gtggcttctc gtatggctag tgaggtttca gatttattcc ccatgtttac agataccgct 3480
aataaattgc agtagtcctt cccatggagc caaagtacat ccttggaatc tttgtccaca 3540
cagcagtcaa ggcagttatg gccaatcagc tgagggtgtc atgtgatgga aaaatctgtt 3600
tgctgttcct gctttattgt ttgctttctg tgtgctgtca tattttggta tcagagttac 3660
attaaatttg caaaatg                                                3677
```

<210> 139

<211> 814

<212> PRT

<213> Homo sapiens

<400> 139

```
Met Lys Val Leu Lys Phe Ala Cys Arg Val Gln Lys Lys Asp Pro Lys
1               5                   10                  15
Asp Trp Ala Val Gln Tyr Arg Glu Ala Val Glu Met Glu Val Gln Ala
                20                  25                  30
Ala Ala Val Ala Val Ala Glu Ala Glu Ala Arg Ala Glu Ala Arg Ala
            35                  40                  45
Gln Met Gly Ile Gly Glu Glu Ala Val Ala Gly Pro Trp Asn Trp Asp
        50                  55                  60
Asp Met Asp Ile Asp Cys Leu Thr Arg Glu Glu Leu Gly Asp Asp Ala
65                  70                  75                  80
Gln Ala Trp Ser Arg Phe Ser Phe Glu Ile Glu Ala Arg Ala Gln Glu
                85                  90                  95
Asn Ala Asp Ala Ser Thr Asn Val Asn Phe Ser Arg Gly Ala Ser Thr
                100                 105                 110
Arg Ala Gly Phe Ser Asp Gly Ala Ser Ile Ser Phe Asn Gly Ala Pro
            115                 120                 125
Ser Ser Ser Gly Gly Phe Ser Gly Gly Pro Gly Ile Thr Phe Gly Val
```

      130   135   140

Ala Pro Ser Thr Ser Ala Ser Phe Ser Asn Thr Ala Ser Ile Ser Phe

145   150   155   160

Gly Gly Thr Leu Ser Thr Ser Ser Ser Phe Ser Ser Ala Ala Ser Ile

             165   170   175

Ser Phe Gly Cys Ala His Ser Thr Ser Thr Ser Phe Ser Ser Glu Ala

             180   185   190

Ser Ile Ser Phe Gly Gly Met Pro Cys Thr Ser Ala Ser Phe Ser Gly

         195   200   205

Gly Val Ser Ser Ser Phe Ser Gly Pro Leu Ser Thr Ser Ala Thr Phe

         210   215   220

Ser Gly Gly Ala Ser Ser Gly Phe Gly Gly Thr Leu Ser Thr Thr Ala

225   230   235   240

Gly Phe Ser Gly Val Leu Ser Thr Ser Thr Ser Phe Gly Ser Ala Pro

             245   250   255

Thr Thr Ser Thr Val Phe Ser Ser Ala Leu Ser Thr Ser Thr Gly Phe

             260   265   270

Gly Gly Ile Leu Ser Thr Ser Val Cys Phe Gly Gly Ser Pro Ser Ser

         275   280   285

Ser Gly Ser Phe Gly Gly Thr Leu Ser Thr Ser Ile Cys Phe Gly Gly

         290   295   300

Ser Pro Cys Thr Ser Thr Gly Phe Gly Gly Thr Leu Ser Thr Ser Val

305   310   315   320

Ser Phe Gly Gly Ser Ser Ser Thr Ser Ala Asn Phe Gly Gly Thr Leu

             325   330   335

Ser Thr Ser Ile Cys Phe Asp Gly Ser Pro Ser Thr Gly Ala Gly Phe

             340   345   350

Gly Gly Ala Leu Asn Thr Ser Ala Ser Phe Gly Ser Val Leu Asn Thr

         355   360   365

Ser Thr Gly Phe Gly Gly Ala Met Ser Thr Ser Ala Asp Phe Gly Gly

         370   375   380

Thr Leu Ser Thr Ser Val Cys Phe Gly Gly Ser Pro Gly Thr Ser Val

385   390   395   400

Ser Phe Gly Ser Ala Leu Asn Thr Asn Ala Gly Tyr Gly Ser Ala Val

             405   410   415

Ser Thr Asn Thr Asp Phe Gly Gly Thr Leu Ser Thr Ser Val Cys Phe

```
                420                 425                 430
Gly Gly Ser Pro Ser Thr Ser Ala Gly Phe Gly Gly Ala Leu Asn Thr
        435                 440                 445
Asn Ala Ser Phe Gly Cys Ala Val Ser Thr Ser Ala Ser Phe Ser Gly
    450                 455                 460
Ala Val Ser Thr Ser Ala Cys Phe Ser Gly Ala Pro Ile Thr Asn Pro
465                 470                 475                 480
Gly Phe Gly Gly Ala Phe Ser Thr Ser Ala Gly Phe Gly Gly Ala Leu
            485                 490                 495
Ser Thr Val Ala Asp Phe Gly Gly Thr Pro Ser Asn Ser Ile Gly Phe
            500                 505                 510
Gly Ala Ala Pro Ser Thr Ser Val Gly Phe Gly Gly Ala His Gly Thr
        515                 520                 525
Ser Leu Cys Phe Gly Gly Ala Pro Ser Thr Ser Leu Cys Phe Gly Ser
        530                 535                 540
Ala Ser Asn Thr Asn Leu Cys Phe Gly Gly Pro Pro Ser Thr Ser Ala
545                 550                 555                 560
Cys Phe Ser Gly Ala Thr Ser Pro Ser Phe Cys Asp Gly Pro Ser Thr
            565                 570                 575
Ser Thr Gly Phe Ser Phe Gly Asn Gly Leu Ser Thr Asn Ala Gly Phe
            580                 585                 590
Gly Gly Gly Leu Asn Thr Ser Ala Gly Phe Gly Gly Gly Leu Gly Thr
        595                 600                 605
Ser Ala Gly Phe Ser Gly Gly Leu Ser Thr Ser Ser Gly Phe Asp Gly
        610                 615                 620
Gly Leu Gly Thr Ser Ala Gly Phe Gly Gly Gly Pro Gly Thr Ser Thr
625                 630                 635                 640
Gly Phe Gly Gly Gly Leu Gly Thr Ser Ala Gly Phe Ser Gly Gly Leu
            645                 650                 655
Gly Thr Ser Ala Gly Phe Gly Gly Gly Leu Val Thr Ser Asp Gly Phe
            660                 665                 670
Gly Gly Gly Leu Gly Thr Asn Ala Ser Phe Gly Ser Thr Leu Gly Thr
        675                 680                 685
Ser Ala Gly Phe Ser Gly Gly Leu Ser Thr Ser Asp Gly Phe Gly Ser
    690                 695                 700
Arg Pro Asn Ala Ser Phe Asp Arg Gly Leu Ser Thr Ile Ile Gly Phe
```

```
        705                 710                 715                 720
Gly Ser Gly Ser Asn Thr Ser Thr Gly Phe Thr Gly Glu Pro Ser Thr
                    725                 730                 735
Ser Thr Gly Phe Ser Ser Gly Pro Ser Ser Ile Val Gly Phe Ser Gly
                740                 745                 750
Gly Pro Ser Thr Gly Val Gly Phe Cys Ser Gly Pro Ser Thr Ser Gly
            755                 760                 765
Phe Ser Gly Gly Pro Ser Thr Gly Ala Gly Phe Gly Gly Gly Pro Asn
        770                 775                 780
Thr Gly Ala Gly Phe Gly Gly Gly Pro Ser Thr Ser Ala Gly Phe Gly
785                 790                 795                 800
Ser Gly Ala Ala Ser Leu Gly Ala Cys Gly Phe Ser Tyr Gly
                805                 810
```

<210> 140
<211> 5097
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (72)..(1910)

<400> 140

```
ctagctatgg aattactgct ttcaatcatc ccctgaatct caccaagcag cagctctcag  60
aggtggctct gatgaccaca tcagtggatg tccttgtgtc catctgtgtc atctttgcaa 120
tgtccttcgt cccagccagc tttgtcgtat tcctgatcca ggagcgggtc agcaaagcaa 180
aacacctgca gttcttcagt ggagtgaagc ctgtcatcta ctggctctct aattttgtct 240
gggatatgtg caattacgtt gtccctgcca cactggtcat tatcatcttc atctgcttcc 300
agcagaagtc ctatgtgtcc tccaccaatc tgcctgtgct agcccttcta cttttgctgt 360
atgggtggtc aatcacacct ctcatgtacc cagcctcctt tgtgttcaag atccccagca 420
cagcctatgt ggtgctcacc agcgtgaacc tcttcattgg cattaatggc agcgtggcca 480
cctttgtgct ggagctgttc accgacaata agctgaataa tatcaatgat atcctgaagt 540
ccgtgttctt gatcttccca cattttttgcc tgggacgagg gctcatcgac atggtgaaaa 600
accaggcaat ggctgatgcc ctggaaaggt ttgggggagaa tcgctttgtg tcaccattat 660
```

```
cttgggactt ggtgggacga aacctcttcg ccatggccgt ggaaggggtg gtgttcttcc 720

tcattactgt tctgatccag tacagattct tcatcaggcc cagacctgta aatgcaaagc 780

tatctcctct gaatgatgaa gatgaagatg tgaggcggga aagacagaga attcttgatg 840

gtggaggcca gaatgacatc ttagaaatca aggagttgac gaagatatat agaaggaagc 900

ggaagcctgc tgttgacagg atttgcgtgg gcattcctcc tggtgagtgc tttgggctcc 960

tgggagttaa tggggctgga aaatcatcaa ctttcaagat gttaacagga gataccactg 1020

ttaccagagg agatgctttc cttaacaaaa atagtatctt atcaaacatc catgaagtac 1080

atcagaacat gggctactgc cctcagtttg atgccatcac agagctgttg actgggagag 1140

aacacgtgga gttctttgcc cttttgagag gagtcccaga gaaagaagtt ggcaaggttg 1200

gtgagtgggc gattcggaaa ctgggcctcg tgaagtatgg agaaaaatat gctggtaact 1260

atagtggagg caacaaacgc aagctctcta cagccatggc tttgatcggc gggcctcctg 1320

tggtgtttct ggatgaaccc accacaggca tggatcccaa agcccggcgg ttcttgtgga 1380

attgtgccct aagtgttgtc aaggagggga gatcagtagt gcttacatct catagtatgg 1440

aagaatgtga agctctttgc actaggatgg caatcatggt caatggaagg ttcaggtgcc 1500

ttggcagtgt ccagcatcta aaaaataggt ttggagatgg ttatacaata gttgtacgaa 1560

tagcagggtc caacccggac ctgaagcctg tccaggattt ctttggactt gcatttcctg 1620

gaagtgttct aaaagagaaa caccggaaca tgctacaata ccagcttcca tcttcattat 1680

cttctctggc caggatattc agcatcctct cccagagcaa aaagcgactc cacatagaag 1740

actactctgt ttctcagaca acacttgacc aagtatttgt gaactttgcc aaggaccaaa 1800

gtgatgatga ccacttaaaa gacctctcat tacacaaaaa ccagacagta gtggacgttg 1860

cagttctcac atcttttcta caggatgaga aagtgaaaga aagctatgta tgaagaatcc 1920

cgttcatacg gggtggctga aagtaaagag gaactagact ttcctttgca ccatgtgaag 1980

tgttgtggag aaaagagcca gaagttgatg tgggaagaag taaactggat actgtactga 2040

tactattcaa tgcaatgcaa ttcaatgcaa tgaaaacgaa attccattac aggggcagtg 2100

cctttgtagc ctatgtcttg tatggctctc aagtgaaaga cttgaattta gtttttttacc 2160

tatacctatg tgaaactcta ttatggaacc caatggacat atgggtttga actcacactt 2220

tttttttgt tcctgtgtat tctcattggg gttgcaacaa taattcatca agtaatcatg 2280

gccagcgatt attgatcaaa atcaaaaggt aatgcacatc ctcattcact aagccatgcc 2340

atgcccagga gactggtttc ccggtgacac atccattgct ggcaatgagt gtgccagaat 2400

tattagtgcc aagttttttca gaaagtttga agcaccatgg tgtgtcatgc tcacttttgt 2460

gaaagctgct ctgctcagag tctatcaaca ttgaatatca gttgacagaa tggtgccatg 2520

cgtggctaac atcctgcttt gattccctct gataagctgt tctggtggca gtaacatgca 2580

acaaaaatgt gggtgtctct aggcacggga aacttggttc cattgttata ttgtcctatg 2640

cttcgagcca tgggtctaca gggtcatcct tatgagactc ttaaatatac ttagatcctg 2700

gtaagaggca aagaatcaac agccaaactg ctggggctgc aagctgctga agccagggca 2760

tgggattaaa gagattgtgc gttcaaacct agggaagcct gtgcccattt gtcctgactg 2820
```

```
tctgctaaca tggtacactg catctcaaga tgtttatctg acacaagtgt attatttctg 2880

gctttttgaa ttaatctaga aaatgaaaag atggagttgt attttgacaa aaatgtttgt 2940

actttttaat gttatttgga attttaagtt ctatcagtga cttctgaatc cttagaatgg 3000

cctctttgta gaaccctgtg gtatagagga gtatggccac tgccccacta tttttatttt 3060

cttatgtaag tttgcatatc agtcatgact agtgcctaga aagcaatgtg atggtcagga 3120

tctcatgaca ttatatttga gtttctttca gatcatttag gatactctta atctcacttc 3180

atcaatcaaa tatttttttga gtgtatgctg tagctgaaag agtatgtacg tacgtataag 3240

actagagaga tattaagtct cagtacactt cctgtgccat gtttttcagc tcactggttt 3300

acaaatatag gttgtcttgt ggttgtagga gcccactgta acaatattgg gcagcctttt 3360

tttttttttt ttaattgcaa caatgcaaaa gccaagaaag tataagggtc acaagtcaaa 3420

caatgaattc ttcaacaggg aaaacagcta gcttgaaaac ttgctgaaaa acacaacttg 3480

tgtttatggc atttagtacc ttcaaataat tggctttgca gatattggat accccattaa 3540

atctgacagt ctcaaatttt tcatctcttc aatcactagt caagaaaaat ataaaaacaa 3600

caaatacttc catatggagc atttttcaga gttttctaac ccagtcttat ttttctagtc 3660

agtaaacatt tgtaaaaata ctgtttcact aatacttact gttaactgtc ttgagagaaa 3720

agaaaaatat gagagaacta ttgtttgggg aagttcaagt gatctttcaa tatcattact 3780

aacttcttcc actttttcca aaatttgaat attaacgcta aaggtgtaag acttcagatt 3840

tcaaattaat ctttctatat tttttaaatt tacagaatat tatataaccc actgctgaaa 3900

aagaaaaaaa tgattgtttt agaagttaaa gtcaatattg attttaaata taagtaatga 3960

aggcatattt ccaataacta gtgatatggc atcgttgcat tttacagtat cttcaaaaat 4020

acagaattta tagaataatt tctcctcatt taatattttt caaaatcaaa gttatggttt 4080

cctcatttta ctaaaatcgt attctaattc ttcattatag taaatctatg agcaactcct 4140

tacttcggtt cctctgattt caaggccata ttttaaaaaa tcaaaaggca ctgtgaacta 4200

ttttgaagaa aacacgacat tttaatacag attgaaagga cctcttctga agctagaaac 4260

aatctatagt tatacatctt cattaatact gtgttacctt ttaaaatagt aatttttttac 4320

attttcctgt gtaaacctaa ttgtggtaga aatttttacc aactctatac tcaatcaagc 4380

aaaatttctg tatattccct gtggaatgta cctatgtgag tttcagaaat tctcaaaata 4440

cgtgttcaaa aatttctgct tttgcatctt tgggacacct cagaaaactt attaacaact 4500

gtgaatatga gaaatacaga agaaaataat aagccctcta tacataaatg cccagcacaa 4560

ttcattgtta aaaaacaacc aaacctcaca ctactgtatt tcattatctg tactgaaagc 4620

aaatgctttg tgactattaa atgttgcaca tcattcattc actgtatagt aatcattgac 4680

taaagccatt tatctgtgtt ttcttcttgt ggttgtatat atcaggtaaa atattttcca 4740

aagagccatg tgtcatgtaa tactgaacca ctttgatatt gagacattaa tttgtaccct 4800

tgttattatc tactagtaat aatgtaatac tgtagaaata ttgctctaat tcttttcaaa 4860

attgttgcat cccccttaga atgtttctat ttccataagg atttaggtat gctattatcc 4920

cttcttatac cctaagatga agctgttttt gtgctctttg ttcatcattg gccctcattc 4980
```

caagcacttt acgctgtctg taacgggatc tatttttgca ctggaatatc tgagaattgc 5040
aaaactagac aaaagtttca caacagattt ctaagttaaa tcattatcat taaaagg   5097

<210> 141
<211> 613
<212> PRT
<213> Homo sapiens

<400> 141
Met Thr Thr Ser Val Asp Val Leu Val Ser Ile Cys Val Ile Phe Ala
1   5   10   15
Met Ser Phe Val Pro Ala Ser Phe Val Val Phe Leu Ile Gln Glu Arg
                20   25   30
Val Ser Lys Ala Lys His Leu Gln Phe Phe Ser Gly Val Lys Pro Val
            35   40   45
Ile Tyr Trp Leu Ser Asn Phe Val Trp Asp Met Cys Asn Tyr Val Val
        50   55   60
Pro Ala Thr Leu Val Ile Ile Ile Phe Ile Cys Phe Gln Gln Lys Ser
65   70   75   80
Tyr Val Ser Ser Thr Asn Leu Pro Val Leu Ala Leu Leu Leu Leu Leu
                85   90   95
Tyr Gly Trp Ser Ile Thr Pro Leu Met Tyr Pro Ala Ser Phe Val Phe
                100   105   110
Lys Ile Pro Ser Thr Ala Tyr Val Val Leu Thr Ser Val Asn Leu Phe
            115   120   125
Ile Gly Ile Asn Gly Ser Val Ala Thr Phe Val Leu Glu Leu Phe Thr
        130   135   140
Asp Asn Lys Leu Asn Asn Ile Asn Asp Ile Leu Lys Ser Val Phe Leu
145   150   155   160
Ile Phe Pro His Phe Cys Leu Gly Arg Gly Leu Ile Asp Met Val Lys
                165   170   175
Asn Gln Ala Met Ala Asp Ala Leu Glu Arg Phe Gly Glu Asn Arg Phe
                180   185   190
Val Ser Pro Leu Ser Trp Asp Leu Val Gly Arg Asn Leu Phe Ala Met
            195   200   205

Ala Val Glu Gly Val Val Phe Phe Leu Ile Thr Val Leu Ile Gln Tyr
  210   215   220

Arg Phe Phe Ile Arg Pro Arg Pro Val Asn Ala Lys Leu Ser Pro Leu
225   230   235   240

Asn Asp Glu Asp Glu Asp Val Arg Arg Glu Arg Gln Arg Ile Leu Asp
            245   250   255

Gly Gly Gly Gln Asn Asp Ile Leu Glu Ile Lys Glu Leu Thr Lys Ile
            260   265   270

Tyr Arg Arg Lys Arg Lys Pro Ala Val Asp Arg Ile Cys Val Gly Ile
            275   280   285

Pro Pro Gly Glu Cys Phe Gly Leu Leu Gly Val Asn Gly Ala Gly Lys
    290   295   300

Ser Ser Thr Phe Lys Met Leu Thr Gly Asp Thr Thr Val Thr Arg Gly
305   310   315   320

Asp Ala Phe Leu Asn Lys Asn Ser Ile Leu Ser Asn Ile His Glu Val
            325   330   335

His Gln Asn Met Gly Tyr Cys Pro Gln Phe Asp Ala Ile Thr Glu Leu
            340   345   350

Leu Thr Gly Arg Glu His Val Glu Phe Phe Ala Leu Leu Arg Gly Val
            355   360   365

Pro Glu Lys Glu Val Gly Lys Val Gly Glu Trp Ala Ile Arg Lys Leu
    370   375   380

Gly Leu Val Lys Tyr Gly Glu Lys Tyr Ala Gly Asn Tyr Ser Gly Gly
385   390   395   400

Asn Lys Arg Lys Leu Ser Thr Ala Met Ala Leu Ile Gly Gly Pro Pro
            405   410   415

Val Val Phe Leu Asp Glu Pro Thr Thr Gly Met Asp Pro Lys Ala Arg
            420   425   430

Arg Phe Leu Trp Asn Cys Ala Leu Ser Val Val Lys Glu Gly Arg Ser
            435   440   445

Val Val Leu Thr Ser His Ser Met Glu Glu Cys Glu Ala Leu Cys Thr
    450   455   460

Arg Met Ala Ile Met Val Asn Gly Arg Phe Arg Cys Leu Gly Ser Val
465   470   475   480

Gln His Leu Lys Asn Arg Phe Gly Asp Gly Tyr Thr Ile Val Val Arg
            485   490   495

```
Ile Ala Gly Ser Asn Pro Asp Leu Lys Pro Val Gln Asp Phe Phe Gly
             500                 505                 510
Leu Ala Phe Pro Gly Ser Val Leu Lys Glu Lys His Arg Asn Met Leu
             515                 520                 525
Gln Tyr Gln Leu Pro Ser Ser Leu Ser Ser Leu Ala Arg Ile Phe Ser
         530                 535                 540
Ile Leu Ser Gln Ser Lys Lys Arg Leu His Ile Glu Asp Tyr Ser Val
545                 550                 555                 560
Ser Gln Thr Thr Leu Asp Gln Val Phe Val Asn Phe Ala Lys Asp Gln
                 565                 570                 575
Ser Asp Asp Asp His Leu Lys Asp Leu Ser Leu His Lys Asn Gln Thr
             580                 585                 590
Val Val Asp Val Ala Val Leu Thr Ser Phe Leu Gln Asp Glu Lys Val
             595                 600                 605
Lys Glu Ser Tyr Val
         610
```

<210> 142
<211> 2214
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (81)..(734)

<400> 142

```
tcctgcaggg ggcaccagag atcttggaca ggcaaactgc agcccttctg catggaacca 60
tcatcctgga ctgtgtcaac atggacctta aaattggaaa ggcaacccca aaggacagca 120
aatatgtgga gaaactagag gcccttttcc cagacctacc caagagaaat gatatatttg 180
attccctaca aaaggcaaag tttgatgtat caggactgac cactgagcag atgctgagaa 240
aagaccagaa gactatctat agacaaggcg tcaaggtggc cattagtgca atatatatgg 300
atttggagat ctgtgaagtc ctggaacgct cccactctcc acccctgaag ctgaccccctg 360
cctcaagtac ccaccctaac ctccatgcct atcttcaagg caacacccag gtctctcgaa 420
agaaacttct gcccctgctc caggaagccc tgtcagcata ttttgactcc atgaagatcc 480
```

```
cttcaggaca gcctgagaca gcagatgtgt ccagggagca agtggacaag gaattggaca 540
gggcaagtaa ctccctgatt tctggcctga gtcaagatga ggaggaccct ccgctgcccc 600
cgacgcccat gaacagcttg gtggatgagt gccctctaga tcaggggctg cctaaactct 660
ctgctgaggc cgtcttcgag aagtgcagtc agatctcact gtcacagtct accacagcct 720
ccctgtccaa gaagtgactg ttgagaggcg aggaggtagt gggtgaggct acctgactca 780
cttcaaatgc atgttttgag atgtttggag attcagcaat tctgtcttca ttgctccagg 840
atctggtata ctgttctcat aaaactgaga ggagaaaaaa agtgaaagaa agcagctgct 900
ttaagaatgg ttttccacct tttcccccta atctctacca atcagacaca ttttattatt 960
taaatctgca cctctctcta ttttatttgc caggggcacg atgtgacata tctgcagtcc 1020
cagcacagtg ggacaaaaag aatttagacc ccaaaagtgt cctcggcatg gatcttgaac 1080
agaaccagta tctgtcatgg aactgaacat tcatcgatgg tctccatgta ttcatttatt 1140
cacttgttca ttcaagtatt tattgaatac ctgcctcaag ctagagagaa aagagagtgc 1200
gctttggaaa tttattccag ttttcagcct acagcagatt atcagctcgg tgacttttct 1260
ttctgccacc atttaggtga tggtgtttga ttcagagatg gctgaatttc tattcttagc 1320
ttattgtgac tgtttcagat ctagtttggg aacagattag aggccattgt cttctgtcct 1380
gatcaggtgg cctggctgtt tctttggatc cctctgtccc agagccaccc agaaccctga 1440
ctcttgagaa tcaagaaaac acccagaaag gccttaatga cctcataggc actcttccaa 1500
aaagacaaca gaactggaat gagaggcctg ggtctgtctc ctgccttagc aggcctatca 1560
atttcttgtc aatctctttt tttccttgct cacattaaaa ggaagcatgg agttctaatg 1620
ctcccataaa ctatgtattt tggcaagaca cttcactact ccaggcctca ctttccccat 1680
ctgtaaaaca gggtttggac taggtgttcc ctggtattct gtgatctgcc tcttgctgcc 1740
attctttctc tcctctgctt ctctgtattt ttcttctgtt atccctgggg gtgctcaggt 1800
tcacttgatt gtctgtattt ctgtgtggtt gtagcaagga ctcagcctca tgtagcacga 1860
ataggggtgt ggttcatggc gtgttgaccc agcagagcac tccctcccac taacttgttc 1920
tgcatgtgta gagtctcccc attttttta acgcaaccct tttccctttt tcctacccca 1980
cagctctgtt ccatgtaagt tgccaacagt ttcactgaac agtggggtat gtgatggttt 2040
tggcatgaca tcttcagtat gaggggggaca gtttgacttc actttgaggg tgtgatgtct 2100
gtagctatgt ggaaggtaaa aatagtggtg tgatcatgaa ccaaaggaat ttatgttttg 2160
taacttgggt actttatttt gcattttgtt atactattaa ataatttttt cctg       2214
```

<210> 143
<211> 218
<212> PRT
<213> Homo sapiens

<400> 143

Met Asp Leu Lys Ile Gly Lys Ala Thr Pro Lys Asp Ser Lys Tyr Val
1   5   10   15

Glu Lys Leu Glu Ala Leu Phe Pro Asp Leu Pro Lys Arg Asn Asp Ile
            20   25   30

Phe Asp Ser Leu Gln Lys Ala Lys Phe Asp Val Ser Gly Leu Thr Thr
            35   40   45

Glu Gln Met Leu Arg Lys Asp Gln Lys Thr Ile Tyr Arg Gln Gly Val
        50   55   60

Lys Val Ala Ile Ser Ala Ile Tyr Met Asp Leu Glu Ile Cys Glu Val
65   70   75   80

Leu Glu Arg Ser His Ser Pro Pro Leu Lys Leu Thr Pro Ala Ser Ser
                85   90   95

Thr His Pro Asn Leu His Ala Tyr Leu Gln Gly Asn Thr Gln Val Ser
                100   105   110

Arg Lys Lys Leu Leu Pro Leu Leu Gln Glu Ala Leu Ser Ala Tyr Phe
            115   120   125

Asp Ser Met Lys Ile Pro Ser Gly Gln Pro Glu Thr Ala Asp Val Ser
        130   135   140

Arg Glu Gln Val Asp Lys Glu Leu Asp Arg Ala Ser Asn Ser Leu Ile
145   150   155   160

Ser Gly Leu Ser Gln Asp Glu Glu Asp Pro Pro Leu Pro Pro Thr Pro
                165   170   175

Met Asn Ser Leu Val Asp Glu Cys Pro Leu Asp Gln Gly Leu Pro Lys
            180   185   190

Leu Ser Ala Glu Ala Val Phe Glu Lys Cys Ser Gln Ile Ser Leu Ser
            195   200   205

Gln Ser Thr Thr Ala Ser Leu Ser Lys Lys
        210   215

<210> 144
<211> 1750
<212> DNA
<213> Homo sapiens

<220>

<221> CDS

<222> (158)..(1492)

<400> 144

```
acttccggtc gtgggccatg ccggggggcgg gcccggaacc gccacggcta gaagaagtct 60
tcacttccca ggagagccaa agcgtgtctg gccctaggtg ggaaaagaac tggctgtgac 120
ctttgccctg acctggaagg gcccagcctt gggctgaatg gcagcaccca cgcccgcccg 180
tccggtgctg acccacctgc tggtggctct cttcggcatg ggctcctggg ctgcggtcaa 240
tgggatctgg gtggagctac ctgtggtggt caaagagctt ccagagggtt ggagcctccc 300
ctcttacgtc tctgtgcttg tggctctggg gaacctgggt ctgctggtgg tgaccctctg 360
gaggaggctg gccccaggaa aggacgagca ggtccccatc cgggtggtgc aggtgctggg 420
catggtgggc acagccctgc tggcctctct gtggcaccat gtggccccag tggcaggaca 480
gttgcattct gtggccttct tagcactggc ctttgtgctg gcactggcat gctgtgcctc 540
gaatgtcact ttcctgccct tcttgagcca cctgccacct cgcttcttac ggtcattctt 600
cctgggtcaa ggcctgagtg ccctgctgcc ctgcgtgctg gccctagtgc agggtgtggg 660
ccgcctcgag tgcccgccag cccccatcaa cggcaccct ggccccccgc tcgacttcct 720
tgagcgtttt cccgccagca ccttcttctg ggcactgact gcccttctgg tcgcttcagc 780
tgctgccttc cagggtcttc tgctgctgtt gccgccacca ccatctgtac ccacagggga 840
gttaggatca ggcctccagg tgggagcccc aggagcagag gaagaggtgg aagagtcctc 900
accactgcaa gagccaccaa gccaggcagc aggcaccacc cctggtccag accctaaggc 960
ctatcagctt ctatcagccc gcagtgcctg cctgctgggc ctgttggccg ccaccaacgc 1020
gctgaccaat ggcgtgctgc ctgccgtgca gagcttttcc tgcttaccct acgggcgtct 1080
ggcctaccac ctggctgtgg tgctgggcag tgctgccaat cccctggcct gcttcctggc 1140
catggtgtg ctgtgcaggt ccttggcagg gctgggcggc ctctctctgc tgggcgtgtt 1200
ctgtgggggc tacctgatgg cgctggcagt cctgagcccc tgcccgcccc tggtgggcac 1260
ctcggcgggg gtggtcctcg tggtgctgtc gtgggtgctg tgtcttggcg tgttctccta 1320
cgtgaaggtg gcagccagct ccctgctgca tggcgggggc cggccggcat tgctggcagc 1380
cggcgtggcc atccaggtgg gctctctgct cggcgctgtt gctatgttcc ccccgaccag 1440
catctatcac gtgttccaca gcagaaagga ctgtgcagac ccctgtgact cctgagcctg 1500
ggcaggtggg gaccccgctc cccaacacct gtctttccct caatgctgcc accatgcctg 1560
agtgcctgca gcccaggagg cccgcacacc ggtacactcg tggacaccta cacactccat 1620
aggagatcct ggctttccag ggtgggcaag ggcaaggagc aggcttggag ccaggggacca 1680
gtgggggctg tagggtaagc ccctgagcct gggacctaca tgtggtttgc gtaataaaac 1740
atttgtattt                                                    1750
```

<210> 145
<211> 445
<212> PRT
<213> Homo sapiens

<400> 145
Met Ala Ala Pro Thr Pro Ala Arg Pro Val Leu Thr His Leu Leu Val
 1   5   10   15
Ala Leu Phe Gly Met Gly Ser Trp Ala Ala Val Asn Gly Ile Trp Val
            20   25   30
Glu Leu Pro Val Val Val Lys Glu Leu Pro Glu Gly Trp Ser Leu Pro
            35   40   45
Ser Tyr Val Ser Val Leu Val Ala Leu Gly Asn Leu Gly Leu Leu Val
        50   55   60
Val Thr Leu Trp Arg Arg Leu Ala Pro Gly Lys Asp Glu Gln Val Pro
65   70   75   80
Ile Arg Val Val Gln Val Leu Gly Met Val Gly Thr Ala Leu Leu Ala
                85   90   95
Ser Leu Trp His His Val Ala Pro Val Ala Gly Gln Leu His Ser Val
            100   105   110
Ala Phe Leu Ala Leu Ala Phe Val Leu Ala Leu Ala Cys Cys Ala Ser
            115   120   125
Asn Val Thr Phe Leu Pro Phe Leu Ser His Leu Pro Pro Arg Phe Leu
        130   135   140
Arg Ser Phe Phe Leu Gly Gln Gly Leu Ser Ala Leu Leu Pro Cys Val
145   150   155   160
Leu Ala Leu Val Gln Gly Val Gly Arg Leu Glu Cys Pro Pro Ala Pro
                165   170   175
Ile Asn Gly Thr Pro Gly Pro Pro Leu Asp Phe Leu Glu Arg Phe Pro
            180   185   190
Ala Ser Thr Phe Phe Trp Ala Leu Thr Ala Leu Leu Val Ala Ser Ala
            195   200   205
Ala Ala Phe Gln Gly Leu Leu Leu Leu Leu Pro Pro Pro Pro Ser Val
        210   215   220
Pro Thr Gly Glu Leu Gly Ser Gly Leu Gln Val Gly Ala Pro Gly Ala

```
      225                     230                     235                     240
      Glu Glu Glu Val Glu Glu Ser Ser Pro Leu Gln Glu Pro Pro Ser Gln
                      245                     250                     255
      Ala Ala Gly Thr Thr Pro Gly Pro Asp Pro Lys Ala Tyr Gln Leu Leu
                      260                     265                     270
      Ser Ala Arg Ser Ala Cys Leu Leu Gly Leu Leu Ala Ala Thr Asn Ala
                  275                     280                     285
      Leu Thr Asn Gly Val Leu Pro Ala Val Gln Ser Phe Ser Cys Leu Pro
                  290                     295                     300
      Tyr Gly Arg Leu Ala Tyr His Leu Ala Val Val Leu Gly Ser Ala Ala
      305                     310                     315                     320
      Asn Pro Leu Ala Cys Phe Leu Ala Met Gly Val Leu Cys Arg Ser Leu
                      325                     330                     335
      Ala Gly Leu Gly Gly Leu Ser Leu Leu Gly Val Phe Cys Gly Gly Tyr
                      340                     345                     350
      Leu Met Ala Leu Ala Val Leu Ser Pro Cys Pro Pro Leu Val Gly Thr
                  355                     360                     365
      Ser Ala Gly Val Val Leu Val Val Leu Ser Trp Val Leu Cys Leu Gly
          370                     375                     380
      Val Phe Ser Tyr Val Lys Val Ala Ala Ser Ser Leu Leu His Gly Gly
      385                     390                     395                     400
      Gly Arg Pro Ala Leu Leu Ala Ala Gly Val Ala Ile Gln Val Gly Ser
                          405                     410                     415
      Leu Leu Gly Ala Val Ala Met Phe Pro Pro Thr Ser Ile Tyr His Val
                      420                     425                     430
      Phe His Ser Arg Lys Asp Cys Ala Asp Pro Cys Asp Ser
          435                     440                     445
```

<210> 146
<211> 2291
<212> DNA
<213> Homo sapiens

<220>
<221> CDS

<222> (132)..(740)

<400> 146

ataatccaca cctactactc aatacctcag aaaatcttcg cttccctaat aatgttgaac 60

cagttacaaa tcattttatt acacagtggc ttaatgatgt tgactgtttc ttggggcttc 120

atgacagaaa gatgtgtgtt ctcggactct gtgctcttat tgatatggaa cagatacccc 180

aagttttaaa tcaggtttct ggacagattt tgccggcttt tatccttta tttaacggat 240

tgaaaagagc atatgcctgc catgcagaac atgagaatga cagtgatgat gatgatgaag 300

ctgaagatga tgatgaaacc gaggaactgg ggagtgatga agatggagat gatgaagatt 360

ggcaagaata tttggagatt ctggctaagc aggctggtga agatggagat gatgaagatg 420

gggaagaaga tgatgctgaa gagactgctc tggaaggcta ttccacaatc attcaaaatc 480

aagataaccc tgttgatgag tatcagatat ttaaagctat ctttcaaact attcaaaatc 540

gtaatcctgt gtggtatcag gcgctgactc acggtcttac tgaagaacaa agaaaacagt 600

tacaggacat agcaactctg gctgatcaaa gaagagcagc ccatgaatcc aaaatgattg 660

agaagcatgg aggatacaaa ttcagtgctc catttctttc tgctgtgtgc ttgtagtgaa 720

gccagcacc agggatgaat tgagttatct ctttctttcc tgctgtgtgc atcatgcaac 780

gagcttgtgt tcctcctagt agtggttcca gaactggttc atgttatcta ttctaaacta 840

ataatcaata gatggacaaa agcgggattt tggggtggg gggggatgga atcatgcaac 900

ctggcactgg aaaagaaatc agcgggattt tggggtggg gggggatggga ggtaccttag 960

agggagtatt ttctttattt tttgaagaaa gtaagatcct gactctgaag cttcaaagtg 1020

acactgtgga aatctgaaac gagggggatgt catgaaggca gctttcttt ttctgaggaa 1080

aaaataggca tggggctacag gactatttaa aatgtctcat ttacagtata aaactcaaag 1140

gtagatgtaa tttttacacc tatgagtatt tgtccaattt ctgtctcttc ctcaccattg 1200

tcattttcat cattgttcct atgtagatta ttggacattt attgtagcac tacataactg 1260

attataaaaa tctgtaaatg aattagcact ttcatattga aacaagcctg ctagcctatg 1320

tataaaatag caaaatgttt gctgtttata aaaagatgta atggggtggg ggcaggggt 1380

aatttcaagt tattaattta aaaatgaact agcaattttg tacctggtag ctttgtggtg 1440

cactcacctc tgatagtgac ttgaattcgg tatgtaaaaa gggggttagtg gtatttcatt 1500

gctgctaaaa atgacaactc cctctgtgtc ctgtttttct taaagctgtc agtgtacaag 1560

tgggtatttg aataccagac cttactgtaa aaaataaaaa aggtggtatc tagagcatgt 1620

aaattggata taaagttctg ctcttaaaga gttgatctaa gagtatggct aaacatctat 1680

atatgcaatc tattaaaaga acttaattcg gctattatgt cttgatttga ttgcagtttt 1740

ttcctaatta taacaaattt ttcctcattg gcctgttttt aatcctgtgc ctagaaggag 1800

tacaaaatgc acactttaca aaattgatat ttaacactta cccactcccc tttccccatc 1860

tcttctaccg ctcttgttga tcgtggtatc tgatcttgac tagataggct gaaggcacat 1920

1980

```
ggttccctcc aaaaaccact attgatacca ctacaaaaac aagccagcaa aaagatactg 2040
tagagaggtt ggcttgcttc cctctcttcc taactgcatg ttgaaaaata agccgttatt 2100
gatcttaaac atcggtcaga tgagtcatac attgggttat tttttatata catgtataca 2160
caaaatattt caaattgaaa gcaacatctt aatggattca aaactattac aagctgttgt 2220
ctaaaacagg tgagaaaaaa atttataact gtaaaaacaa atgcacatat tgatatttaa 2280
aatgcgtaat t                                                   2291
```

<210> 147
<211> 203
<212> PRT
<213> Homo sapiens

<400> 147

```
Met Cys Val Leu Gly Leu Cys Ala Leu Ile Asp Met Glu Gln Ile Pro
 1               5                  10                  15
Gln Val Leu Asn Gln Val Ser Gly Gln Ile Leu Pro Ala Phe Ile Leu
              20                  25                  30
Leu Phe Asn Gly Leu Lys Arg Ala Tyr Ala Cys His Ala Glu His Glu
           35                  40                  45
Asn Asp Ser Asp Asp Asp Asp Glu Ala Glu Asp Asp Asp Glu Thr Glu
        50                  55                  60
Glu Leu Gly Ser Asp Glu Asp Asp Ile Asp Glu Asp Gly Gln Glu Tyr
65                  70                  75                  80
Leu Glu Ile Leu Ala Lys Gln Ala Gly Glu Asp Gly Asp Asp Glu Asp
              85                  90                  95
Trp Glu Glu Asp Asp Ala Glu Glu Thr Ala Leu Glu Gly Tyr Ser Thr
              100                 105                 110
Ile Ile Asp Asp Glu Asp Asn Pro Val Asp Glu Tyr Gln Ile Phe Lys
           115                 120                 125
Ala Ile Phe Gln Thr Ile Gln Asn Arg Asn Pro Val Trp Tyr Gln Ala
        130                 135                 140
Leu Thr His Gly Leu Asn Glu Glu Gln Arg Lys Gln Leu Gln Asp Ile
145                 150                 155                 160
Ala Thr Leu Ala Asp Gln Arg Arg Ala Ala His Glu Ser Lys Met Ile
              165                 170                 175
```

Glu Lys His Gly Gly Tyr Lys Phe Ser Ala Pro Val Val Pro Ser Ser
                180   185   190
Phe Asn Phe Gly Gly Pro Ala Pro Gly Met Asn
             195   200

<210> 148

<211> 2148

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (64)..(1812)

<400> 148

gcgtgaagcg cggacctttc aacaagggct ttattaattc tcacgctgcg gccccggaaa 60

gcgatggagg tggcggctaa ttgctcccta cgggtgaaga gacctctgtt ggatccccgc 120

ttcgagggtt acaagctctc tcttgagccg ctgccttgtt accagctgga gcttgacgca 180

gctgtggcag aggtaaaact tcgagatgat caatatacac tggaacacat gcatgctttt 240

ggaatgtata attacctgca ctgtgattca tggtatcaag acagtgtcta ctatattgat 300

acccttggaa gaattatgaa tttaacagta atgctggaca ctgccttagg aaaaccacga 360

gaggtgtttc gacttcctac agatttgaca gcatgtgaca accgtctttg tgcatctatc 420

catttctcat cttctacctg ggttaccttg tcagatggaa ctggaagatt gtatgtcatt 480

ggaacaggtg aacgtggaaa tagcgcttct gaaaaatggg agattatgtt taatgaagaa 540

cttggggatc cttttattat aattcacagt atctcactgc taaatgctga agaacattct 600

atagctaccc tacttcttcg aatagagaaa gaggaattgg atatgaaagg aagtggtttc 660

tatgtttctc tggagtgggt cactatcagt aagaaaaatc aagataataa aaaatatgaa 720

attattaagc gtgatattct ccgtggaaag tcagtgccac attatgctgc tattgagcct 780

gatggaaatg gtctaatgat tgtatcctac aagtctttaa catttgttca ggctggtcaa 840

gatcttgaag aaaatatgga tgaagacata tcagagaaaa tcaaagaacc tctgtattac 900

tggcaacaga ctgaagatga tttgacagta accatacggc ttccagaaga cagtactaag 960

gaggacattc aaatacagtt tttgcctgat cacatcaaca ttgtactgaa ggatcaccag 1020

tttttagaag gaaaactcta ttcatctatt gatcatgaaa gcagtacatg gataattaaa 1080

gagagtaata gcttggagat ttccttgatt aagaagaatg aaggactgac ctggccagag 1140

ctagtaattg gagataaaca aggggaactt ataagagatt cagcccagtg tgctgcaata 1200

gctgaacgtt tgatgcattt gacctctgaa gaactgaatc caaatccaga taaagaaaaa 1260

ccaccttgca gtgctcaaga gttagaagaa tgtgatattt tctttgaaga gagctccagt 1320

ttatgcagat ttgatggcaa tacattaaaa actactcatg tggtgaatct tggaagcaac 1380

cagtaccttt tctctgtcat agtggatcct aaagaaatgc cctgcttctg tttgcgccat 1440

gatgttgatg ccctactctg gcaaccacac tccagcaaac aagatgatat gtgggagcac 1500

atcgcaactt tcaatgcttt aggctatgtc caagcatcaa agagagacaa aaaatttttt 1560

gcctgtgctc caaattactc gtatgcagcc ctttgtgagt gccttcgtcg agtattcatc 1620

tatcgtcagc ctgctcccat gtccactgta ctttacaaca gaaaggaagg caggcaagta 1680

ggacaggttg ctaagcagca agtagcaagc ctagaaacca atgatcctat tttaggattt 1740

caggcaacaa atgagagatt atttgttctt actaccaaaa acctcttttt aataaaagta 1800

aatacagaga attaattatt ctaacatatt ggcctctttg tactggaaaa gtattcagtg 1860

gtacctggag gtctggacag ttatactgta acctcttaag ttttaatgtg ctaaatatat 1920

cttgtatgat tttttatttt ttaataacat tggaaatata ttcaagagat tatgattctg 1980

taaagctgtg gaatgaagct gcagatttag agaacattgg cttctgaaaa aaaaaaagag 2040

tgaagatagt actagcaagt atacttattt tttaaaacag gctagaatct catgttttat 2100

atgaaagatg tacaattcag tgtttaaaaa taaaaatatt tattgtgt   2148

<210> 149

<211> 583

<212> PRT

<213> Homo sapiens

<400> 149

Met Glu Val Ala Ala Asn Cys Ser Leu Arg Val Lys Arg Pro Leu Leu
1   5   10   15

Asp Pro Arg Phe Glu Gly Tyr Lys Leu Ser Leu Glu Pro Leu Pro Cys
                20   25   30

Tyr Gln Leu Glu Leu Asp Ala Ala Val Ala Glu Val Lys Leu Arg Asp
            35   40   45

Asp Gln Tyr Thr Leu Glu His Met His Ala Phe Gly Met Tyr Asn Tyr
        50   55   60

Leu His Cys Asp Ser Trp Tyr Gln Asp Ser Val Tyr Tyr Ile Asp Thr
65   70   75   80

Leu Gly Arg Ile Met Asn Leu Thr Val Met Leu Asp Thr Ala Leu Gly
                85   90   95

Lys Pro Arg Glu Val Phe Arg Leu Pro Thr Asp Leu Thr Ala Cys Asp
        100   105   110

Asn Arg Leu Cys Ala Ser Ile His Phe Ser Ser Ser Thr Trp Val Thr
        115   120   125

Leu Ser Asp Gly Thr Gly Arg Leu Tyr Val Ile Gly Thr Gly Glu Arg
        130   135   140

Gly Asn Ser Ala Ser Glu Lys Trp Glu Ile Met Phe Asn Glu Glu Leu
145   150   155   160

Gly Asp Pro Phe Ile Ile Ile His Ser Ile Ser Leu Leu Asn Ala Glu
                165   170   175

Glu His Ser Ile Ala Thr Leu Leu Leu Arg Ile Glu Lys Glu Glu Leu
            180   185   190

Asp Met Lys Gly Ser Gly Phe Tyr Val Ser Leu Glu Trp Val Thr Ile
        195   200   205

Ser Lys Lys Asn Gln Asp Asn Lys Lys Tyr Glu Ile Ile Lys Arg Asp
    210   215   220

Ile Leu Arg Gly Lys Ser Val Pro His Tyr Ala Ala Ile Glu Pro Asp
225   230   235   240

Gly Asn Gly Leu Met Ile Val Ser Tyr Lys Ser Leu Thr Phe Val Gln
                245   250   255

Ala Gly Gln Asp Leu Glu Glu Asn Met Asp Glu Asp Ile Ser Glu Lys
            260   265   270

Ile Lys Glu Pro Leu Tyr Tyr Trp Gln Gln Thr Glu Asp Asp Leu Thr
        275   280   285

Val Thr Ile Arg Leu Pro Glu Asp Ser Thr Lys Glu Asp Ile Gln Ile
    290   295   300

Gln Phe Leu Pro Asp His Ile Asn Ile Val Leu Lys Asp His Gln Phe
305   310   315   320

Leu Glu Gly Lys Leu Tyr Ser Ser Ile Asp His Glu Ser Ser Thr Trp
            325   330   335

Ile Ile Lys Glu Ser Asn Ser Leu Glu Ile Ser Leu Ile Lys Lys Asn
        340   345   350

Glu Gly Leu Thr Trp Pro Glu Leu Val Ile Gly Asp Lys Gln Gly Glu
        355   360   365

Leu Ile Arg Asp Ser Ala Gln Cys Ala Ala Ile Ala Glu Arg Leu Met
    370   375   380

His Leu Thr Ser Glu Glu Leu Asn Pro Asn Pro Asp Lys Glu Lys Pro
385   390   395   400

Pro Cys Ser Ala Gln Glu Leu Glu Glu Cys Asp Ile Phe Phe Glu Glu
                405   410   415

Ser Ser Ser Leu Cys Arg Phe Asp Gly Asn Thr Leu Lys Thr Thr His
                420   425   430

Val Val Asn Leu Gly Ser Asn Gln Tyr Leu Phe Ser Val Ile Val Asp
                435   440   445

Pro Lys Glu Met Pro Cys Phe Cys Leu Arg His Asp Val Asp Ala Leu
                450   455   460

Leu Trp Gln Pro His Ser Ser Lys Gln Asp Asp Met Trp Glu His Ile
465   470   475   480

Ala Thr Phe Asn Ala Leu Gly Tyr Val Gln Ala Ser Lys Arg Asp Lys
                485   490   495

Lys Phe Phe Ala Cys Ala Pro Asn Tyr Ser Tyr Ala Ala Leu Cys Glu
                500   505   510

Cys Leu Arg Arg Val Phe Ile Tyr Arg Gln Pro Ala Pro Met Ser Thr
                515   520   525

Val Leu Tyr Asn Arg Lys Glu Gly Arg Gln Val Gly Gln Val Ala Lys
                530   535   540

Gln Gln Val Ala Ser Leu Glu Thr Asn Asp Pro Ile Leu Gly Phe Gln
545   550   555   560

Ala Thr Asn Glu Arg Leu Phe Val Leu Thr Thr Lys Asn Leu Phe Leu
                565   570   575

Ile Lys Val Asn Thr Glu Asn
                580

<210> 150

<211> 30

<212> RNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: artificially
     synthesized sequence

<400> 150
agcaucgagu cggccuuguu ggccuacugg   30

<210> 151
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: artificially
     synthesized sequence

<400> 151
gcggctgaag acggcctatg tggccttttt ttttttttt tt   42

<210> 152
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: artificially
     synthesized sequence

<400> 152
agcatcgagt cggccttgtt g   21

<210> 153
<211> 21
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: artificially
    synthesized sequence

<400> 153

gcggctgaag acggcctatg t   21

<210> 154
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: artificially
    synthesized sequence

<400> 154

tacggaagtg ttacttctgc   20

<210> 155
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: artificially
    synthesized sequence

<400> 155

tgtgggaggt tttttctcta   20

<210> 156
<211> 17

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: artificially
     synthesized sequence

<400> 156
gttttcccag tcacgac   17

<210> 157
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: artificially
     synthesized sequence

<400> 157
caggaaacag ctatgac   17